Always Already New

Media, History, and the Data of Culture

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In memory of
Facundo Montenegro

Introduction: Media as Historical Subjects

This book examines the ways that media—and particularly new media—are experienced and studied as historical subjects. It uses the examples of recorded sound ("new" between 1878 and 1910) and the World Wide Web, since the Web is a core instance or application of what are today familiarly and collectively referred to as "new media." In pairing these examples, I begin with the truism that all media were once new as well as the assumption, widely shared by others, that looking into the novelty years, transitional states, and identity crises of different media stands to tell us much, both about the course of media history and about the broad conditions by which media and communication are and have been shaped.[1] Though presented chronologically in parts I and II, the histories of recorded sound and digital networking rendered here are intended to speak to one other. In particular, I mean to turn "The Case of Phonographs" against "The Question of the Web," and thereby challenge readers to imagine what a meaningful history of today's new media might eventually look like as well as to think about how accounts of media in general should be written.

This, then, is a book about the ways scholars and critics do media history, but it is more importantly about the ways that people experience meaning, how they perceive the world and communicate with each other, and how they distinguish the past and identify culture. Different versions and styles of media history do make a difference. Is the history of media first and foremost the history of technological methods and devices? Or is the history of media better understood as the story of modern ideas of communication? Or is it about modes and habits of perception? Or about political choices and structures? Should we be looking for a sequence of separate "ages" with ruptures, revolutions, or paradigm shifts in between, or should we be seeing more of an evolution? A progress? Different answers to questions like these suggest different intellectual projects, and they have practical ramifications for the ways that media history gets researched and written. Some

accounts of media history offer a sequence of inventors and machines, others trace the development of ideas or epistemologies, and still others chart a changing set of social practices, while many combine elements of several such approaches. In each case, history comes freighted with a host of assumptions about what is important and what isn't—about who is significant and who isn't—as well as about the meanings of media, qualities of human communication, and causal mechanisms that account for historical change. If there is a prevailing mode in general circulation today, I think it is a tendency to naturalize or essentialize media—in short, to cede to them a history that is more powerfully theirs than ours.

Naturalizing, essentializing, or ceding agency to media is something that happens at a lexical level every time anyone says "the media" in English, as if media were a unified natural entity, like the wind. This turn of phrase doubtlessly comes about because of widely shared perceptions that today's news and entertainment outlets together comprise a relatively unified institution. So one refers to what "the Media" is doing in the same spirit that one might refer to what "Big Oil" is up to or how the NASDAQ is performing this month. Forget that the word *media* is rightly plural, not singular. Media are. A medium is. And added to the indisputable if thus tacitly granted consolidation of their corporate ownership, there is another reason why the word *media* gets used so vaguely of late. Media are frequently identified as or with technologies, and one of the burdens of modernity seems to be the tendency to essentialize or grant agency to technology. Here is a simple example: when the Hubble Space Telescope was launched in 1990, it was found to have an incorrectly ground mirror, so that it presented a distorted view of space. My daily newspaper reported at the time that the telescope "needs glasses," making a joke of the fact that in effect, the telescope is glasses already. It is a medium. It doesn't squint around on its own except in a metaphoric sense; it mediates between our eyes and the sites of space that it helps us to experience as sights. Other, much less obvious and less cartoony versions of the same confusion tend to crop up in works by media theorists when technology appears as a form of evidence, a matter I shall return to below.

It pays to be careful with language, and yet media seem to be hard to talk or write about with much precision. For that reason, I begin here by working out a broad definition of media before offering an introduction to both the specific case of early recorded sound, and my larger argument about media and doing media history. My purpose is to be as clear as possible in challenging the ways that I think today's new media, in particular, tend casually to be conceived of as what might be called the end of media history. In thus adapting the phrase "the end of history," I adapt the title of an influential article and book by

Francis Fukuyama. Fukuyama proposed what he described as "a coherent and directional History of mankind that will eventually lead the greater part of humanity to liberal democracy" (1992, xii). ("Liberal" in this context means committed to an open, laissez-faire market.) With the cold war over and capitalism ascendant, Fukuyama argued, the end of that History, with a capital H, was more clearly in sight. Whatever the ultimate fate of this thesis—the controversy it sparked was both trenchant and varied—my point is that media, somewhat like Fukuyama's "mankind," tend unthinkingly to be regarded as heading a certain "coherent and directional" way along an inevitable path, a History, toward a specific and not-so-distant end. Today, the imagination of that end point in the United States remains uncritically replete with confidence in liberal democracy, and has been most uniquely characterized by the cheerful expectation that digital media are all converging toward some harmonious combination or global "synergy," if not also toward some perfect reconciliation of "man" and machine. I note cheerfulness because the same view has not always been so happy. Distributed digital networks have long been described as the ultimate medium in another sense: collectively, they are the medium that can survive thermonuclear war.

This overdetermined sense of reaching the end of media history is probably what accounts for the oddly perennial newness of today's new media. It lingers behind the notion that modernism is now "complete" and familiar temporal sensibilities are at an end.[2] And it accounts as well for the many popular histories and documentaries with titles like *The History of the Future, A Brief History of the Future,* and *Inventing the Future.* In scholarship the same sense of ending appears, for instance, in Friedrich A. Kittler's admittedly "mournful" proposition that "the general digitization of channels and information erases the differences among individual media" so that soon, "a total media link on a digital base will erase the very concept of medium" (1999, 1–2).[3] Likewise, according to Peter Lunenfeld, the digital offers "the universal solvent into which all difference of media dissolves into a pulsing stream of bits and bytes" (1999, 7), effectively suggesting "an end to the end-games of the postmodern era" (2000, xxii). By these accounts, media are the disappearing subjects of the very history they motivate.

Let me clarify: all historical subjects are certainly not alike. The histories of science and art, for instance, differ considerably in the construction of their respective subjects. The art historical object from long ago—a vase, painting, or sculpture—is still art today, however much tastes may have changed. But the scientific object from long ago—curing by leeches, the ether, a geocentric solar system, and so on—isn't science at all. It is myth or fiction. Which kind of historical subjects are media? Are they more like nonscientific

or scientific objects? The difference between the two is less about the way different kinds of history get written than it is about a deeply held mental map that people share. A legacy of the Enlightenment, this mental map by convention separates human culture from nonhuman nature.[4] Art and other nonscientific pursuits arise from or represent culture, while science represents nature (I am allowing for a lot of play in that word *represents*). All of the modern disciplines are implicated. Some branches of knowledge, like anthropology, highlight the problems of even making the distinction, since the first generations of anthropologists tended to treat culture as if it were nature. Other disciplines, like history itself, illuminate the casual force with which the distinction gets deployed, since the term *history* denotes both the thing we are doing to the past and the past we are doing it to. This linguistic fact of English is equally apparent in the "two uneven but symbolic halves" of every history book. Every history book has an outside introduction, like the one you are reading, as well as an inside or body. In the first, the author explains the plan of her research, and in the second she offers her results, the details of the past at which she has arrived.[5] The combination becomes effective partly to the degree that the split is taken unreflectively by her readers to echo that culture/nature distinction, the outside artfully made and the inside ("just the facts") truthfully, exactingly rendered.

Media muddy the map. Like old art, old media remain meaningful. Think of medieval manuscripts, eight-track tapes, and rotary phones, or semaphores, stereoscopes, and punch-card programming: only antiquarians use them, but they are all recognizable as media. Yet like old science, old media also seem unacceptably unreal. Neither silent film nor black-and-white television seems right anymore, except as a throwback. Like acoustic (nonelectronic) analog recordings, they just don't do the job. The "job" in question is largely though not exclusively one of representation, and a lot of the muddiness of media as historical subjects arises from their entanglement with this swing term. Media are so integral to a sense of what representation itself *is*, and what counts as adequate—and thereby commodifiable—representation, that they share some of the conventional attributes of both art historical objects and scientific ones. Even media that seem less involved with representation than with transmission, like telegraphs, offer keenly persuasive representations of text, space/time, and human presence, in the form of code, connection, and what critics today call "telepresence," that feeling that there's someone else out there on the other end of the line.[6] It is not just that each new medium represents its predecessors, as Marshall McLuhan noted long ago, but rather, as Rick Altman (1984, 121) elaborates, that media represent and delimit representing, so that new media provide new sites for the ongoing and vernacular experience of representation as such.

When I say that this is a book about media as historical subjects, I mean to motivate just this complexity. If *history* is a term that means both what happened in the past and the varied practices of representing that past, then media are historical at several different levels. First, media are themselves denizens of the past. Even the newest new media today come from somewhere, whether that somewhere gets described broadly as a matter of supervening social necessity, or narrowly in reference to some proverbial drawing board and a round or two of beta testing.[7] But media are also historical because they are functionally integral to a sense of pastness. Not only do people regularly learn about the past by means of media representations—books, films, and so on—using media also involves implicit encounters with the past that produced the representations in question. These implicit encounters with the past take many forms. A photograph, for instance, offers a two-dimensional, visual representation of its subject, but it also stands uniquely as evidence, an index, because that photograph was caused in the moment of the past that it represents. Other encounters with the past can be less clear, less causal, and less indexical, as when the viewers of a television newscast are "taken live" to the outside of a building where something happened a little while ago, or when digital images recomplicate the notion of a photographic index altogether.

As my allusion to the Hubble Space Telescope suggests, one helpful way to think of media may be as the scientific instruments of a society at large. Since the late seventeenth century, scientific instruments have emerged as matters of consensus within a community of like-minded and fairly well-to-do people, eventually called scientists. If one scientist or a group of scientists invents a new instrument, they must demonstrate persuasively that the instrument does or means what they say, that it represents the kind and order of phenomena they intend. Other scientists start using the instrument, and ideally, its general acceptance soon helps to make it a transparent fact of scientific practice. Now scientists everywhere use the air pump, say, or the electrophoresis gel without thinking about it. They look through the instrument the way one looks through a telescope, without getting caught up in battles already won over whether and how it does the job. The instrument and all of its supporting protocols (norms about how and where one uses it, but also standards like units of measure) have become self-evident as the result of social processes that attend both laboratory practice and scientific publication.

Media technologies work this way too. Inventing, promoting, and using the first telephones involved lots of self-conscious attention to telephony. But today, people converse through the phone without giving it a moment's thought. The technology and all of its supporting protocols (that you answer "Hello?" and that you pay the company, but also

standards like touch-tones and twelve-volt lines) have become self-evident as the result of social processes, including the habits associated with other, related media. Self-evidence or transparency may seem less important to video games, radio programs, or pulp fiction than to telephones, yet as critics have long noted, the success of all media depends at some level on inattention or "blindness" to the media technologies themselves (and all of their supporting protocols) in favor of attention to the phenomena, "the content," that they represent for users' edification or enjoyment.[8] When one uses antique media like stereoscopes, when one encounters unfamiliar protocols, like using a pay telephone abroad, or when media break down, like the Hubble Space Telescope, forgotten questions about whether and how media do the job can bubble to the surface.

When media are new, they offer a look into the different ways that their jobs get constructed as such. Of particular interest in this book are the media that variously do the job of inscription. Like other media, inscriptive media represent, but the representations they entail and circulate are crucially material as well as semiotic. Unlike radio signals, for instance, inscriptions are stable and savable. Inscriptions don't disappear into the air the way that broadcasts do (though radio and television can of course be taped—that is, inscribed). The difference seems obvious, but it is important to note that the stability and savability of inscriptions are qualities that arise socially as well as perceptually. The defining fixity of print as a form of inscription, for example, turns out to have arisen as a social consequence of early modern print circulation as much as from any perceptual or epistemological conditions inherent to printed editions in distinction from manuscript copies. Likewise, the defining scientific or self-evident qualities of landscape photography turn out to have resulted from nineteenth-century practices of illustration and narration as much as from any precision inherent to photographs in distinction from painted panoramas or other forms.[9] The introduction of new media, these instances suggest, is never entirely revolutionary: new media are less points of epistemic rupture than they are socially embedded sites for the ongoing negotiation of meaning as such. Comparing and contrasting new media thus stand to offer a view of negotiability in itself—a view, that is, of the contested relations of force that determine the pathways by which new media may eventually become old hat.

One of the advantages of drawing this analogy between scientific instruments and media is that it helps to locate media at the intersection of authority and amnesia. Just as science enjoys an authority by virtue of its separation from politics and the larger social sphere, media become authoritative as the social processes of their definition and dissemination are separated out or forgotten, and as the social processes of protocol formation and acceptance get ignored.[10] One might even say that a supporting protocol shared by both science and media is the eventual abnegation and invisibility of supporting protocols.[11] Science and media become transparent when scientists and society at large forget many of the norms and standards they are heeding, and then forget that they are heeding norms and standards at all. Yet transparency is always chimerical. As much as people may converse through a telephone and forget the telephone itself, the context of telephoning makes all kinds of difference to the things they say and the way they say them. The same is also true of science: geneticists use *drosophila* (fruit flies) as a kind of instrument, and genetics itself would be substantively different if a different organism were used.[12] The particular authority of science makes this an uncomfortable claim, so crossing over to the other half of the collective mental map renders the point more clearly. Just as it makes no sense to appreciate an artwork without attending to its medium (painted in watercolors or oils? sculpted in granite or Styrofoam?), it makes no sense to think about "content" without attending to the medium that both communicates that content and represents or helps to set the limits of what that content can consist of. Even when the content in question is what has for the last century or so been termed "information," it cannot be considered "free of" or apart from the media that help to define it. However commonplace it is to think of information as separable from, cleanly contained in, or uninformed by media, such thinking merely redoubles a structural amnesia that already pertains.[13]

I define media as socially realized structures of communication, where structures include both technological forms and their associated protocols, and where communication is a cultural practice, a ritualized collocation of different people on the same mental map, sharing or engaged with popular ontologies of representation.[14] As such, media are unique and complicated historical subjects. Their histories must be social and cultural, not the stories of how one technology leads to another, or of isolated geniuses working their magic on the world. Any full accounting will require, as William Uricchio (2003, 24) puts its, "an embrace of multiplicity, complexity and even contradiction if sense is to be made of such" pervasive and dynamic cultural phenomena.

Defining media this way admittedly keeps things muddy. If media include what I am calling protocols, they include a vast clutter of normative rules and default conditions, which gather and adhere like a nebulous array around a technological nucleus. Protocols express a huge variety of social, economic, and material relationships. So telephony includes the salutation "Hello?" (for English speakers, at least), the monthly billing cycle, and the wires and cables that materially connect our phones. E-mail includes all of the elaborately layered technical protocols and interconnected service providers that constitute

the Internet, but it also includes both the QWERTY keyboards on which e-mail gets "typed" and the shared sense people have of what the e-mail genre is. Cinema includes everything from the sprocket holes that run along the sides of film to the widely shared sense of being able to wait and see "films" at home on video. Some protocols get imposed, by bodies like the National Institute of Standards and Technology or the International Organization for Standardization. Other protocols get effectively imposed, by corporate giants like Microsoft, because of the market share they enjoy. But there are many others that emerge at the grassroots level. Some seem to arrive *sui generis,* discrete and fully formed, while many, like digital genres, video rentals, and computer keyboards, emerge as complicated engagements among different media. And protocols are far from static. Although they possess extraordinary inertia, norms and standards can and do change, because they are expressive of changeable social, economic, and material relationships.

Nor are technological nuclei as stable as I have just implied. Indeed, much of their coherence as nuclei may be heuristic. (That is, they only look that way when they get looked at.) As Walter Benjamin (1999, 476) noted about historical subjects generally, "The present determines where, in the object from the past, that object's fore-history and after-history diverge so as to circumscribe its nucleus." So it is as much of a mistake to write broadly of "the telephone," "the camera," or "the computer" as it is "the media," and of—now, somehow, "the Internet" and "the Web"—naturalizing or essentializing technologies as if they were unchanging, "immutable objects with given, self-defining properties" around which changes swirl, and to or from which history proceeds.[15] Instead, it is better to specify telephones in 1890 in the rural United States, broadcast telephones in Budapest in the 1920s, or cellular, satellite, corded, and cordless landline telephones in North America at the beginning of the twenty-first century. Specificity is key. Rather than static, blunt, and unchanging technology, every medium involves a "sequence of displacements and obsolescences, part of the delirious operations of modernization," as Jonathan Crary puts it (1999, 13). Consider again how fast digital media are changing today. Media, it should be clear, are very particular sites for very particular, importantly social as well as historically and culturally specific experiences of meaning. For this reason, the primary mode of this book is the case study.

For all of their particularity, media frequently get lumped together by different schools of thought for overarching purposes. If media are sites for experiences of meaning—critics have pondered—to what degree are meaning and its experience determined or circumscribed by technological conditions? To what extent are they imposed or structurally

effected by a "culture industry," the combined interests of Hollywood, Bertelsmann, AOL/Time Warner, and an ever dwindling number of multinational media conglomerates? Or are experiences of meaning more rightly produced than determined and imposed? How might production in this case include the ordinary people (who experience meanings) as well as the multinational industry, notwithstanding such a dramatic disparity in their power?[16] This sort of abstract puzzling does have a practical politics. If meanings are imposed by industry, then policing media becomes a viable project: quashing violence on television and labeling offensive lyrics will protect minors from harm and lead to a decrease in violent crime. But if viewers and listeners themselves help variously, literally, to produce the meanings they enjoy, then policing media is pretty much beside the point. Viewers will make of violent content what they will. At stake are two different versions of agency. Either media audiences lack agency or they possess it. Hardly anyone would say the truth can't lie somewhere in between these two extremely reductive positions, but legislators still have to vote either yes or no when the question comes up.

Related questions of agency are vital to media history. As I've already noted, there is a tendency to treat media as the self-acting agents of their own history. Thus, Jay David Bolter and Richard Grusin (1999, 15) write that new media present themselves

> as refashioned and improved versions of other media. Digital media can best be understood through the ways in which they honor, rival, and revise linear-perspective painting, photography, film, television, and print. No medium . . . seems to do its cultural work in isolation from other media, any more than it works in isolation from other social and economic forces. What is new about new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media.

Here, Bolter and Grusin's identification of media as social and economic forces appears amid a lot of syntax that seems to make media into intentional agents, as if media purposefully refashion each other and "do cultural work." However astute their readings of the ways different media compare and contrast at a formal level, Bolter and Grusin have trimmed out any mention of human agents, as if media were naturally the way they are, without authors, designers, engineers, entrepreneurs, programmers, investors, owners, or audiences. Of course Bolter and Grusin know better.[17] People just write this way, Raymond Williams has suggested, because agency is so hard to specify; technological innovation appears autonomous, Williams ([1974] 1992, 129) argues, "only to the extent that we fail to identify and challenge its real agencies."

Ironically, though, critics who do celebrate the real agency of individual inventors sometimes end up a lot like Bolter and Grusin. Kittler's media discourse analysis valorizes Thomas Edison, offering several competing versions of the inventor's agency with regard to the invention of recorded sound. "Edison's phonograph," according to Kittler (1999, 27), "was a by-product of the attempt to optimize telephony and telegraphy by saving expensive copper cables." But Edison also "developed his phonograph in an attempt to improve the processing speed of the Morse telegraph beyond human limitations," Kittler notes, and he did so when "a Willis-type machine [for synthesizing sounds] gave him the idea" and "a Scott-type machine [for drawing sound waves] pushed him towards its realization" (190). Though these statements each sound convincing, complete with human agents and human intentions, Kittler offers no evidence at all to support them. He might have cited from some thousands of pages of existing documentation, from Edison's experimental notebooks or items of correspondence from 1877. Documents from that July, for instance, indicate that Edison was struggling to improve the sibilant articulation of Alexander Graham Bell's telephone. In one technical note from July 18 titled "Speaking Telegraph," Edison (1994, 443–444) comments, "Spkg [speaking] vibrations are indented nicely" on waxed paper by "a diaphram [*sic*] having an embossing point," so that, he reasons, he should be "able to store up & reproduce automatically at any future time the human voice perfectly." This realization could be called the invention of the phonograph, and so could a number of other related actions at Menlo Park, New Jersey, over the next few months. My point is less that Kittler overstates and undercites than that he appears to be arguing backward from what Geoffrey Winthrop-Young and Michael Wutz (1999, xiv) term an "intrinsic technological logic"—a logic Kittler reads as inherent to the phonograph once it was already invented.[18] However extraordinarily rich his sense of media and the "discourse networks" they help to support, it is as if Kittler doesn't need to persuade his readers of details about why or how phonographs were invented because he already knows what phonographs are, and therefore he knows what (and particularly how) they mean. Again, that is to make a medium both evidence and cause of its own history.

In the pages that follow, I have resisted thinking of media themselves as social and economic forces and have resisted the idea of an intrinsic technological logic. Media are more properly the results of social and economic forces, so that any technological logic they possess is only apparently intrinsic. That said, I have also resisted taking a reductively antideterministic position. At certain levels, media are very influential, and their material properties do (literally and figuratively) *matter,* determining some of the local conditions of communication amid the broader circulations that at once express and constitute social relations. This "materiality" of media is one of the things that interests me most.

The advantage of offering finely grained case studies is that it allows these complexities to emerge. I have worked within narrow chronological brackets, both in treating the case of phonographs and that of digital networks, and I have further limited my scope to the cultural geography of the United States, with which I am most familiar. While such a perspective has obvious shortcomings, the detail and specificity of each case permits an account that is exacting, and at the same time broadly suggestive of the ways that new media emerge into and engage their cultural and economic contexts as well as the ways that new media are shaped by and help to shape the semiotic, perceptual, and epistemic conditions that attend and prevail.

By amplifying two specific case studies, one past and one more present, the shape of this book resembles and appreciates the "media archaeologies" produced by a number of recent critics. As Geert Lovink (2003, 11) generalizes the archaeological perspective, "Media archaeology is first and foremost a methodology, a hermeneutic reading of the 'new' against the grain of the past, rather than a telling of the histories of technologies from past to present." By reading digital media "into history, not the other way around," Lovink suggests, the media archaeologist seeks a built-in refusal of teleology, of narrative explanations that smack structurally of the impositions of metahistory.[19] Since telling a story imposes a logic retrospectively onto events, that is, these critics seek to avoid and thereby critique storytelling. (Just as—and at the same time that—no one in cultural studies wants to admit of technological determinism, no one in cultural studies seems to want to be historicist according to any but a "new" historicist paradigm.) This helps to explain Lev Manovich's (2001) "parallels" between Russian constructivist cinema and today's new media. It explains why Alan Liu's (2004b, 72) brilliant comparison of the paper forms used in Taylorist scientific management and today's "encoded discourse" reveals a "surprising bandwidth of connection," in which the past serves only as "an index or placeholder (rather than cause or antecedent) of the future." In short, the impulse to resist historical narrative redraws criticism as a form of "aesthetic" or "literary" undertaking at the same time that it tends to impose a temporal asymmetry.[20] The past is often represented discretely, formally, in isolation—as or by means of anecdote—while the present retains a highly nuanced or lived periodicity, as when Lovink's (2003, 43–44) criticism parses so carefully the mid-1990s' "mythological-libertarian techno-imagination of *Mondo 2000* and *Wired;* the massification of the medium, accompanied by the dotcom craze; [and] the consolidation during the 2000–2002 depression," and the networking of today.[21]

I want to distinguish my method from media archaeology and related cultural studies in several respects. Media archaeology is rightly and productively mindful of historical narrative as a cultural production of the present. The two case studies that follow seek further

to pick out related forms of mindfulness in as well as with regard to the past. Why these two cases? Both describe—even, yes, narrate—moments when the future narratability of contemporary events was called into question by widely shared apprehensions of technological and social change as well as by varied engagements—tacit as well as knowing—with what I refer to as "the data of culture": records and documents, the archivable bits or irreducible pieces of modern culture that seem archivable under prevailing and evolving knowledge structures, and that thus suggest, demand, or defy preservation. History in this sense is no less of a cultural production in the past than it is in the present. My first case concerns events that occurred during the extended moment at the end of the nineteenth century when the humanities emerged in something like their present form, both institutionally and epistemologically, becoming what Lawrence Veysey (1999, 52) terms the "special [bulwark] of an orientation toward the past." (The humanities are our past-oriented disciplines: history, English, classics, philosophy, art history, comparative literature.) My second case concerns events that occurred during the extended moment at the end of the twentieth century when the humanities in the United States may have enjoyed the possibility of centralization, in the form of state sponsorship, yet entered what is widely perceived as a period of ongoing "crisis."[22] I offer two case studies in order to benefit from contrast and comparison, not to refine one at the expense of the other. The chronological gap between them has helped me keep "one eye focused on historical variability and the other on [elements of] epistemological constancy" that underwrite the humanities still, and that like all protocols, can be difficult to see without seeking or contriving some penumbra of discontinuity, such as the joint discontinuousness of time frames and newness of new media rendered in these pages.[23]

In chapter 1 I describe the medium of recorded sound as it was first introduced to the U.S. public. During the spring and summer of 1878, audiences could pay to see and hear recordings made and replayed on Edison's initially crude device. A series of lyceum demonstrations across the United States, together with the many newspaper accounts they stimulated, helped to identify the new medium. Then in 1889–1893, audiences got a second look and listen. This time they paid for encounters with an improved version of Edison's machine, adapted to play prerecorded musical selections in public places. Neither endeavor lasted or was profitable for very long. While it is easy to reason in hindsight that these initial endeavors eventually failed because neither the technology nor its supporting protocols had successfully been defined yet, one might also argue that neither the lyceum demonstrations nor the public amusement trade successfully located the U.S.

public that they supposed. Media and their publics coevolve. Because the demonstrations of 1878 have never been studied before in any detail, it has never been clear the extent to which—far from possessing an intrinsic logic of its own—the new medium was experienced as party to the existing, dynamic (and extrinsic) logics of writing, print media, and public speech. Audiences experienced and helped to construct a coincident yet contravening logic for recorded sound, responding to material features of the new medium as well as the contexts of its introduction and ongoing reception and development.

As Jürgen Habermas first proposed and subsequent scholars have elaborated, the extrinsic or cultural logics of print media and public speech are particularly important historically because beginning sometime in the seventeenth century, they doubled as the cultural logic of the bourgeois public sphere. That is, the same assumptions that lay behind the commonsense intelligibility of publication and public speaking *as such* also helped to "determine how the political arena operates," locating an abstract social space for public discussion and opinion, in which some voices, some expressions, were legitimate—and legitimated—while others were constrained.[24] On one level, Edison's phonograph stumbled hard against this public sphere: by intruding on experiences of printedness and public speaking, the phonograph records of 1878 and 1889–1893 abruptly called its commonsense parameters into question, begging a mutual redefinition of print, speech, and public. On another level, however, Edison and his phonographs were themselves part of much larger versions of the same questions already being broached. Though Edison would not, of course, have expressed it this way, he and his invention were part of an ongoing industrialization of communication. (Here's where his telegraphs and telephones fit in too, along with a massive growth and diversification of print media.) The industrialization of communication resulted from as well as abetted new social and economic structures. These new structures served—anything but abruptly—to jeopardize the very commonness and sensibleness of the commonsense intelligibility of publication, and also the boundaries and operations of the political arena. By this account, Edison and the first phonographs didn't stumble against the public sphere as much as they encountered it stumbling. The new medium with its emergent norms and standards at this level actually helped to steady and partly reconstruct a common or normative sense of publicness and an abstract public, one for which recording and playback were intelligible, and for which the logic of phonographs and phonograph records might seem to be intrinsic.

The vague, new "social and economic structures" of the previous paragraph deserve a word of elaboration, since I have described them as causal (if also reciprocal) agents of media history in the nineteenth century. These new social and economic structures

included things like modern corporations and the "visible hand" of an emergent managerial class as well as modern markets with centralized trading in securities and commodity futures—familiar characters all, in histories of industrialized communication or "the control revolution," as James Beniger (1986) has called it.[25] Less frequently noted in the same accounts but equally pertinent were concomitant social and economic structures like an emergent class of wage laborers, the emergent demographics of increased immigration and U.S. imperial expansion, and the related emergence of new, urban mass audiences for print media and public spectacle. If the industrialization of communication broadly attended social and economic structures such as these, then the new medium of recorded sound consisted in part of protocols expressive of the relationships they entailed. This is not to suggest that early phonographs were in some respect either managerial or proletarian. Rather, the commonsense intelligibility of the new medium emerged in keeping with a dialectic between control and differentiation, between the traditional public sphere and its potential new constituents. Predictably, the potential new constituents most important to the definition of the new medium were also in some respects the least "other" or alien. Chapter 2 demonstrates in detail that the new medium of recorded sound was deeply defined by women, generally middle-class women, who helped to make it a new, newly intelligible medium for home entertainment.

Chapter 2 follows the new medium out of public places and into private homes. That transit, accomplished with such success around 1895 to 1900, scuttled the expectations of Edison and others who thought of phonographs as business machines for taking dictation. Playback not recording emerged as the primary function of the medium and a commercial bonanza for its corporate owners, although dictation phonographs (Dictaphone was one trade name) would remain continuously available for sale in the United States until the eventual success of magnetic tape recorders after the Second World War. This switch in primary function from dictation to amusement has been popularly explained as both an example of Edison's "accidental genius" (*Wired* 2002, 92) and the inventor Emile Berliner's "killer application" (Naughton 2000, 245), since Berliner envisioned his version of recorded sound, the gramophone, as an amusement device from its first unveiling in 1888.[26] The switch has also been explained as an industrial design triumph: a better power source, cheaper machines, and mass-produced musical recordings. And it has likewise been explained as a culture industry coup: star performers, hit records, major labels, and seductive advertising campaigns. Most accounts agree that consumer demand played a decisive role in making the new medium of recorded sound into a mass medium—one that by 1910 was helping to restructure the ways that Americans experienced music and

helping (along with movies, magazines, comics, vaudeville circuits, and the like) to reorient U.S. social life toward ever-increasing leisure consumption.

Consumer demand was decisive, I agree, but part of my argument is that the very categories of consumer and producer are inadequate to explain fully the deep definition of new media. When media are new, when their protocols are still emerging and the social, economic, and material relationships they will eventually express are still in formation, consumption and production can be notably indistinct. The new medium of recorded sound became intelligible as a form of home entertainment according to ongoing constructions of home and public—constructions that relied centrally during the late nineteenth century on changing roles for women, and further, changing experiences of gender and cultural difference. The same broad social contexts have been described as equally, if differently, defining for telephones, monthly magazines, and motion pictures in the same period.[27] Women helped to engender a new mutual logic for media and public life. Protocols and indeed the primary function of the new medium of recorded sound emerged in part according to contexts involving practices as varied as mimicry by vaudevillian comediennes and parlor piano playing by ladylike amateurs, shaped by potently gendered constructions of work and leisure as well as of production and consumption. Even the technical protocols of the medium, like the hardness of recording surfaces and the design of recording styli, emerged partly in response to the timbre of women's voices, which proved tricky to record well (and thus to make public), and therefore informed emerging commonsense norms for A&R (artists and repertory) and emerging commonsense standards of acoustic fidelity.

In short, the definition of new media depends intricately on the whole social context within which production and consumption get defined—and defined as distinct—rather than merely on producers and consumers themselves. This is not to diminish the role of human agents but only to describe more thoroughly where more of them stand in order to resist, as much as possible, the disavowal of underlying economic structures or cultural politics. At the end of the nineteenth century in the United States, the medium of recorded sound helped both to destabilize and to steady or partly reconstruct an abstract sense of publicness, one that increasingly included women, immigrants, and workers—increasingly included "others"—as constitutive members. Of course, rather like Groucho Marx not belonging to any club that would have him as a member, the new sense of public that emerged was different or other than the old, in the least because the new public sphere was increasingly experienced as collective of consumers rather than citizens, increasingly restructured, as Habermas (1989) has indicated, by a cultural premium on publicity and

public taste. Not that I wish to romanticize the Habermasian bourgeois public sphere or overstate its debatable explanatory power. The public is a "practical fiction," in Michael Warner's (2002, 8) terms, based in the United States on whiteness and masculinity. Its conception, however, "is unthinkable," Michael Geisler (1999, 99) explains, "without the centripetal power of media to offset the centrifugal force" of social differentiation.[28]

This dialectic between control and differentiation, between existing media publics and their potential new constituents, has emerged in a slightly different form today as a central device in the growing literature on globalization. Intuitively, worldwide digital and satellite communications pull people together, and in doing so they moderate differences and homogenize cultures. In this literature, media serve as instruments of Western cultural imperialism and mature finance capital, creating a global village of increasingly Americanized consumers. Culturally, globalization is a process involving worldwide transfers of technology and translocations of people—migrations, diasporas, and displacements—that is resisted hopelessly, if at all, by the centrifugal pressures of localism. However apposite this dark picture may be, it is painted with a broad brush, the wide strokes of which threaten to blur away the very localism they purport to show in decline and at the same time exaggerate the ways in which today's new media are distinctively new.

It will pay to remember that at the beginning of the twentieth century, the medium of recorded sound formed part of an increasingly global economy marked by flows of capital and commodities on an unprecedented scale—flows that would dwindle abruptly with the First World War and then remain unmatched in magnitude until the end of the century.[29] The new medium depended on a worldwide trade in materials—like German chemicals and Indian lac (the insect secretion required to make the shellac for records)—as well as recording artists, recording studios, and phonograph and gramophone dealers around the world. As Andrew Jones (2001, 54) puts it, "This new (and immensely profitable) industry was—from its very inception—transnational in character." The British Gramophone Company established subsidiaries in India in 1901, Russia in 1902, and Iran in 1906. In 1907, Edison's National Phonograph Company (never more than a bit player on the international scene) had subsidiaries in Europe, Australia, Argentina, and Mexico. By then, mass-produced musical records were available to consumers in Budapest and Sydney, Santiago and Beijing, Johannesburg and Jersey City. Although capitalization and manufacturing remained based primarily in the United States, Britain, France, and Germany, record-pressing plants opened in India in 1908 and China in 1914, and similar efforts were made with varying success in Australia in 1907 and Japan in 1911.[30]

Record labels soon succeeded around the globe, including the Lebanese Baidaphone label, for instance, which supplied customers across the Middle East, but had its records

manufactured in Berlin from master disks produced in Beirut. By 1913, the Argentinean Discos Nacional label had its own studio and factory, and was selling millions of records a year in Argentina, while many of its tango recordings were also being issued in Europe under other labels.[31] The result was as much a matter of negotiating and circulating cultural difference as it was of homogenizing cultures or consumption. The popular success of recording helped to foster "a vast range of new urban popular musics" (A. Jones 2001, 54), adaptive indigenous expressions that flourished amid cultural politics at once local *and* global. By some accounts, the American Columbia label issued more "foreign" titles within the United States than it did other ones, so successful were its efforts to supply the nation's immigrant audiences and niche markets between 1908 and 1923 (Gronow 1982, 5).[32] Meanwhile, the Gramophone Company in India issued catalogs in Punjabi, Urdu, Hindi, Bengali, Tamil, Telegu, and Malayalam, at the same time that it employed at least one popular artist who recorded in English, Arabic, Kutchi, Turkish, Sanskrit, and Pushtu.[33]

What these examples suggest about media is far more interesting and complicated than the homogenization or Americanization of cultures, or the unparalleled purchase of the globalizing postmodern. Media help to *"organize and reorganize popular perceptions of difference within a global economic order,"* so that increasingly "one's place is not so much a matter of authentic location or rootedness but one's relationship to economic, political, technological, and cultural flows" (Curtin, 2001, 338). Increasingly, in other words, global media help to create a world in which people are not local only because of where they are or are from but also because of their relationships to media representations of localism and its fate. Even before the First World War, the experience of playing records and consuming the varied conventions of recording—including the varied patterns of commodification—turned the new medium of recorded sound into "something like the first global vernacular" (Hansen 1999, 68).[34] Here, I am drawing on Michael Curtin's description of television today and Miriam Hansen's account of Hollywood films in the "classical" period, but their points do hold nicely for early recorded sound and first-wave globalization.

Recorded sound remained new in the first years of the twentieth century in something of the same sense that digital communications remain new at the beginning of the twenty-first: widely perceived as technologically advanced and advancing, globally connected amid intense competition, unstinting hype, and increasingly open and extensive markets. Of course, there are differences between globalization now and globalization then as well as between different constructions of the new. The comparative study of media must be exactingly contrastive. Yet there are obvious parallels to be drawn too, and I think—it may be clear by now—that the early history of recorded sound holds a particular resonance

for envisioning what can today be called the early history of digital media. Part of this resonance is superficial, but part of it involves the idea of history itself—what it means to experience a sense of history or historical fact, what it means to write the early history of anything, and what the histories of media specifically involve. In part because recorded sound developed in ways that its earliest promoters and audiences did not expect, and because digital networks have likewise developed in unanticipated ways, both cases offer a chance to cut across the technological determinism of popular accounts while at the same time allowing a more nuanced sense of how the material features of media and the social circulation of material things help variously to shape both meaning and communication. Media histories that lack this conjoined interest in the material and the historiographical have tended to dismiss or diminish the importance of phonographs in favor of electronic contemporaries, particularly telegraph and telephone networks, which so intuitively began to "dematerialize" communication along the trajectory that distributed digital networking today extends.[35]

At the broadest level, the initial development of recorded sound for improved business communications and its eventual incarnation as (at least primarily) a domestic amusement do suggest a number of immediate parallels to digital media. Like the transition from mainframe computers to PCs, the new medium became less centralized and expensive to use as well as more "personal" with better storage capacity. Like the text-based World Wide Web developed at the European Organization for Nuclear Research (CERN) and then transformed by the success of a more image-inclusive browser, Mosaic, written by programmers at the University of Illinois, the new medium of recorded sound was stripped of its research and development (R & D) past and became broadly commercialized. And like MP3 files and file-sharing technology for downloading music, the new medium distributed music in a new format, challenging existing market structures and provoking the bitter disputes over intellectual property that I have analyzed elsewhere.

Though suggestive, comparisons like these can also be pretty glib, and I want to dwell instead on another kind of parallel between recorded sound and digital media. This is a book less about sound than about text, less about the political economy of music than about the social experience of meaning as a material fact. Edison's phonograph inscribed in a new way, one that many of its first users evidently found mysterious. The inscriptions that Edison's phonograph made were tangible, portable, and immutable: records. But unlike more familiar inscriptions, they were also illegible. No person could read recordings the way a person reads handwritten scrawls, printed pages, or musical notes, or even the way a person examines a photograph or drawing to glean its meaning. Only machines

could "read" (that is, "play") those delicately incised grooves. To top it off, Edison's phonograph seemed to inscribe or "capture" sound indiscriminately, capaciously—anything from noise to music—without regard for the speaker or the source. And it seemed to inscribe directly, without using ears, eyes, hands, a pencil, or an alphabet. The accounts rendered here of 1878 and 1889–1893 (chapter 1) and 1895–1910 (chapter 2) are in part a cultural history of the ways these new inscriptions were apprehended and commodified—that is, the ways these new inscriptions became gradually less mysterious as inscriptions and more transparent as forms of or aids to cultural memory, part of and party to the data of culture.

Digital media inscribe too, and they do so in what are mysterious new ways. (Mysterious to me, at least, and anyone else without an engineering background.) I see words written on my computer screen, for instance, and I know its operating system and other programs have been written by programmers, but the only related inscriptions of which I can be fully confident are the ones that come rolling out of the attached printer, and possibly the ones that I am told were literally printed onto chips that have been installed somewhere inside. At least inscriptions like printer output and microprocessor circuits share the properties of tangibility, portability, and immutability. The others? Who knows? I execute commands to save my data files—texts, graphics, sounds—but in saving them, I have no absolute sense of digital savability as a quality that is familiarly material. I have tended to chalk this up to the difference between the virtual and the real, without stopping to ponder what virtual inscriptions (N. Katherine Hayles [1999, 30–31] calls them "flickering signifiers") could possibly be.[36] Like the mysteries surrounding the inscription of recorded sound onto surfaces of tinfoil and then wax at the end of the nineteenth century, the mysteries surrounding the virtual inscription of digital documents are part of the ongoing definition of these new media in and as they relate to history. History "is written," Steve Jones (1999, 23) imagines, for instance, "in the electrons, generally, or [the] magnetic particles or pits and valleys that make up" different storage media. Like so many casual appeals to itty-bitty ones and zeros, there is an element of practical fantasy or useful fiction here that makes a difference to the emergent meanings of digital media.

Different inscriptions do make a difference. The sociologist Bruno Latour (1990) has demonstrated just how powerful inscriptions (his "immutable mobiles") are in the work of science. Scientists collect and circulate inscriptions, using some inscriptions—like electron micrographs, data sheets, lab notes, and cited articles—to produce others—such as grant applications and scientific papers for refereed journals. Other disciplines or types of inquiry work this way too. Classicists, for instance, work partly with inscribed archaeological

artifacts (stone tablets, coins, and so on) and inscribed archival ones (papyrus, vellum, and paper; manuscripts, print editions, concordances, and monographs). And of course, society at large depends on oodles of different inscriptions, everything from street signs, newspapers, and videos, to medical charts, price tags, and paperbacks. The relative functions or merits of different sorts of inscriptions can be difficult to parse, particularly if one is unfamiliar with the social contexts in which they circulate. There are inscriptions that make sense in broad contexts (any adult knows how a ten-dollar bill works, for example) and others that make sense only in exactingly narrow contexts (like a baby picture, a dry-cleaning ticket, or the tiny accession numbers painted by a museum curator onto a rare specimen). Whole new modes of inscription—such as capturing sounds by phonograph in 1878, or creating and saving digital files today—make sense as a result of social processes that define their efficacy as simultaneously material and semiotic. A computer engineer can explain how digital files really are created and saved, but I would insist that the vernacular experience of this creatability and savability makes at least as much difference to the ongoing social definition (that is, the uses) of new, digital media.

Because they are at some level material, one important quality that all inscriptions share is a relationship with the past. Whether scribbled down just a second ago or chiseled into stone during the sixth millennium BCE, whether captured in the blink of a shutter or accumulated over months and years of bookkeeping, inscriptions attest to the moments of their own inscription in the past. In this sense, they instantiate the history that produced them, and thus help to direct any retrospective sense of what history in general is.[37] For example, the history of the Salem witch trials is known largely because people at the time wrote about them. These documents contain legible information, but they also carry plenty of other data by virtue of their materiality—their material existence and material or forensic properties. Historians today read the Salem documents, of course, yet they also "read the background"; they analyze the written words, but they also assess the look, feel, and smell of the paper, sometimes without even realizing they're doing so.[38] A shared sense of writing, of what can be written down and what cannot, also helps make them comprehensible in a lot of subtle ways. A whole social context for and of writing existed then in Massachusetts, and a related context presently exists, although today's tacit knowledge of writing includes influential details about what writing isn't: it isn't like photography; it isn't like sound recording. Modes of inscription that Salem witches and divines could never have imagined in the seventeenth century are now subtly and unavoidably part of the way that seventeenth-century inscriptions are understood.

This means that media are reflexive historical subjects. Inscriptive media in particular are so bound up in the operations of history that historicizing *them* is devilishly difficult.

There's no getting all of the way "outside" them to perform the work of historical description or analysis.[39] Our sense of history—of facticity in relation to the past—is inextricable from our experience of inscription, of writing, print, photography, sound recording, cinema, and now (one must wonder) digital media that save text, image, and sound. The chapters that follow are in one sense argumentative examples of exactly this. They demonstrate how new modes of inscription are complicated within the meaning and practice of history, the subjects, items, instruments, and workings of public memory. Inquiring into the history of a medium that helped to construct that inquiring itself is sort of like attempting to stand in the same river twice: impossible, but it is important to try, at least so the (historicity of the) grounds of inquiry become clear.

How does the same sort of reflexivity complicate today's new media? How is doing a history of the World Wide Web, for instance, already structured by the Web itself? How is digital inscription, with its mysteriously virtual pages and files, part of an emergent, new sense of history for the digital age? Chapters 3 and 4 pursue questions like these in different yet complementary ways. Chapter 3 looks at some of the earliest instances of digitally networked text. It asks how creators and users of the ARPANET, the precursor to the Internet, experienced computer networks as requiring or related to inscription. What was the larger economy of inscription and inscriptiveness within which they experienced digitally networked text? What were the documents amid and against which digital ones might have been defined? Like chapter 1 in its focus on 1878 and 1889–1893, chapter 3 opens a narrow window, 1968–1972, in order to glimpse a new medium at its newest. Then, like chapter 2, chapter 4 broadens this prospect by focusing on later, more popular uses of still-emergent digital media. It asks how history is represented on the World Wide Web and how the Web is being used to represent its own history. Further, it asks how using the Web may be prompting users to underlying assumptions about the new and the old, about a sense of time, a sense of present and past, and even a sense of ending. My idea is that this last question, about using the Web, is the one that reveals just how linked the first two are: history *on* the Web and history *of* the Web. These are not identical, of course, but they are inextricable.[40]

Like the missionaries who wrote histories of the Americas seemingly moments after stepping off their ships from Europe in the sixteenth and seventeenth centuries, a good number of people have already written histories of the Internet and the World Wide Web. Although the first Web server only went online in 1990, for instance, "The orthodox accounts ([Vannevar] Bush to [Doug] Engelbart to [Ted] Nelson to everything else)," admits Michael Joyce (2001, 211), have already taken "on the old testamentary feel of the Book of Numbers: 'Of the children of Manasseh by their generations, after their families, by

the house of their fathers.'"[41] The Moses or Edison of these patrilineal accounts tends to be Timothy Berners-Lee, the computer scientist at CERN who wrote and released the Web's basic architecture, prompted the first generation of browsers, and now heads the World Wide Web Consortium (W3C) based at MIT.[42] He and his colleague, Robert Cailliau, pitched the Web to their employer as an information management tool for CERN's own continued work in particle physics. Chapter 4 will look further into how this history of the Web is being told, as well as how the Web appears in some respects to resist history.

Beyond CERN, the broader physics community made early use of the World Wide Web. For instance, the library at the Stanford Linear Accelerator Center (SLAC) soon offered Web-based access to "preprints"—articles that are on their way through the peer-review process, but that haven't appeared in print or electronically yet with the final imprimatur of a refereed journal. The new accessibility of preprints made them not more authoritative but certainly more integral to the work of physicists. The practice of doing physics (like doing classics, as it happens) changed in keeping with the accessibility and abundance of what had before been inscriptions that circulated slowly and in narrow contexts.[43] Elsewhere on the disciplinary map, doing art history has also changed in similar ways, but it changed first in the early twentieth century with the advent of slide lectures as a defining pedagogical practice. As Robert Nelson (2000, 417, 422) explains, the slide in an art history lecture gets referred to and treated not as a "copy of an original, but as the object itself," so that "arguments based upon slides alone are persuasive, even if the evidence only exists within the rhetorical/technological parameters of the lecture itself" (as, for instance, "when objects of greatly different sizes and from unrelated cultures are regarded as comparable because they appear side by side in the slide lecture"). According to Nelson, the result was a gradually more inductive and positivistic discipline; because or as part of the widespread adoption of slides in lecturing, artworks became self-evident facts in a new way.

There is an anachronistic or before-the-fact echo of Hayles's flickering signifier here in the lecture hall, with new layers of semiotic process between art students and their subjects. But what these thumbnail histories of disciplines help to suggest more broadly is that the properties, accessibility, and abundance of inscriptions matter to their facticity, not what's true or false but rather what counts as knowledge and what doesn't, what questions seem interesting and important to ask.[44] And if the facticity and practices of doing physics and doing art history have changed in accordance with changing modes of inscription, it seems reasonable to think that the disciplinary practice of doing media history is changing with the media that it does history to.

I *The Case of Phonographs*

4 *New Media </Body>*

The Internet of 1854

In 1998, historian Roy Rosenzweig observed that the *New York Times* had mentioned the Internet only once before 1988. Though his finding might have been based on reading the *Times* and its index, or a certain amount of cranking through microfilm, Rosenzweig used a Lexis/Nexus database to search the *Times*.[1] Searching today can be yet a different matter, since the ProQuest Company has made its full-text version available to customers on the World Wide Web. ProQuest scanned the newspaper from microfilm and linked the resulting digital images to their linguistic content in an underlying ASCII text, which can be searched "through the ProQuest interface."[2] So users who belong to a ProQuest subscriber group can now search the *New York Times* as an online database and retrieve PDF images of articles and pages from 1851 to 2001. There are wrinkles, however. A quick search for "the Internet" reveals seventy-five mentions before 1988, the earliest in an advertisement for patent medicine published in September 1854. The scanning technology used by ProQuest has misread "the interest" on microfilm as "the Internet," here and on numerous other occasions. So the *Times* did not mention the Internet in 1854, except insofar as ProQuest—that is, the Internet—is sure that it did. Neither the microform version of the 1854 advertisement nor its digitized image include "the Internet"; these words appear only in a remote ASCII transcription, searched but unseen, as well as in the query box where a researcher has typed them into her Web browser.

Like a Freudian slip, the Internet of 1854 is a fleeting, if symptomatic, incoherence. Researchers stumble and move on, as if over the incidental irruption of an active unconscious. But what psychic debility, what repressed urge, can explain this errant search result? The Internet of 1854 illustrates the limitations that presently attend optical character recognition (OCR). The scanner chronically "misreads," not because of any

hardware malfunction or programming error but precisely because scanning is not reading. If the Internet of 1854 expresses an unconscious desire, then, it is the long-lived anthropomorphic dream of a reading machine and a self-apprehending text. And it is this dream that helps to deflect researchers' attention from the real human agents involved, like the typesetters and printers of 1854, the microfilm camera operators and film processors of the twentieth century, and the scanner technicians and data handlers employed today by ProQuest's offshore contractor. Add to these a talented cast of what Bruno Latour would call "nonhuman participants"—like metal sorts of type, I, n, t, e, r, e, s, t, all variously worn and inked; a paper copy, possibly creased or stained; a frame of microfilm, possibly scratched or overexposed; as well as several generations of saved electronic data, "dirty" and partly cleaned—and this fleeting parapraxis begins to speak volumes.[3] Like an errata sheet bound into an early modern book, today's errant search result reminds users that the complete work, the *New York Times* in this case, is less of an "autonomous object" than the ongoing result of its own making, remaking, and reception.[4]

My point is only incidentally that the Internet is wrong about its own history. More important, ProQuest's "Historical Newspapers" and Web-based documents like them are "historical" in some interesting ways. In one sense, the pages of the *New York Times* that appear in desktop windows are what Vivian Sobchack (2004, 306) might call "distilled images": they are intensely labored points of contact between the present and the past, a collision and an overlap of different times and formats.[5] In another sense, however, these images are diluted not distilled: they are scans of films of pages, attenuated in their stages of removal from a unique original printed in 1854. Yet to the reader whose research interest happens to coincide with "the interest" of 1854, in this case, neither distillation nor dilution needs to be acknowledged. ProQuest's *Times,* like the microfilm before it, gets cited simply as the *Times.* The researcher's footnote assumes as well as performs an identity between the original of 1854 and its later reproductions, as if a paper copy were equal to and identical with its image on a screen.

Nor are the same concerns moot when the Web-based documents in question are first-generation examples, created for the World Wide Web itself, rather than laboriously imported from older media. For example, the Web site of the World Wide Web Consortium (W3C) offers "A Little History of the World Wide Web." The little history identifies both "the **first web page**" and "the least recently modified web page," both from 1990 and CERN, the European research center for nuclear physics where Berners-Lee invented and named the World Wide Web.[6] The first Web page is identified as <http://nxoc01.cern.ch/hypertext/WWW/TheProject.html> without being quoted

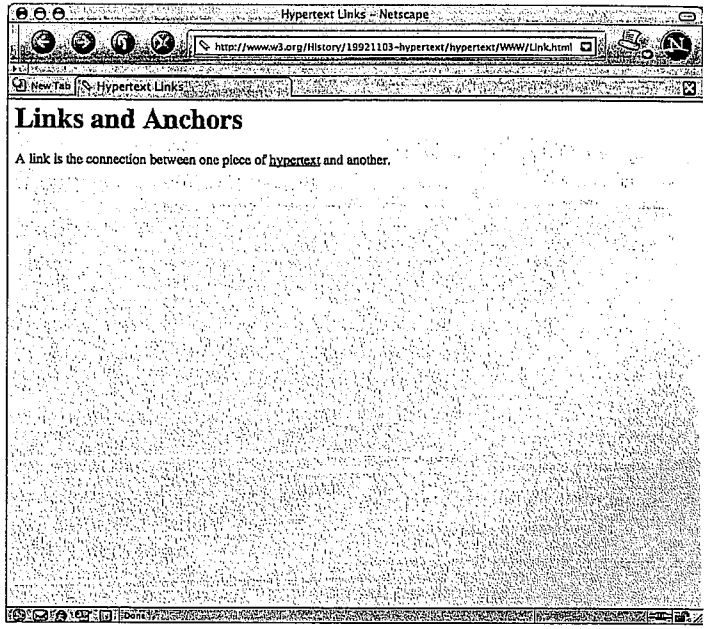

Figure 4.1 The least recently modified Web page, 1990–2005. (*Source:* <www.w3c.org>.)

or described, because, unfortunately, "CERN no longer supports the historical site." The least recently modified web page does still exist, however, and can be viewed by users of the Web today. The underlined words represent a hyperlink, which leads users to another page on the W3C Web site. The least recently modified page turns out to be a twelve-word definition of hyperlinks: "A link is the connection between one piece of hypertext and another."

What is "least recently modified" about this page? How—in other words—is it historical? Its location has changed, since it now resides on a server at W3C and not at CERN. Its unique identifier—its name, if not its title—has changed, since a new location requires a new URL. Its context has also changed, since the words "least recently modified" could not possibly have signified the hyperlink leading users to it in 1990. And its appearance has changed, since it now opens via a Web browser that did not exist in

1990 and, likely, on a monitor that didn't either. One thing that has not changed is the underlying HTML source,

```
<title>Hypertext Links</title>
<h1>Links and Anchors</h1>
A link is the connection between one piece of
<a href=WhatIs.html>hypertext</a> and another
```

The words and markup are the same now as they were in 1990, when they were written and saved on a CERN computer. This makes the least recently modified page historical in quite a different sense than the "historical site" that CERN no longer supports or the first Web page, which is identified with its unique URL rather than as the words and markup it contained. The least recently modified page is offered to readers as a historical document within a context that complicates the very grounds of its historicity.

A column of newsprint rendered as a PDF file and a Web page written in the first iteration of HTML are very different electronic documents. One is a digitized image, and the other a first-generation digital object, born digital. One is data within a relational database accessible via the Web, and the other is a Web page linked among related pages. Despite their differences, both electronic documents are presented on the Web today as evidence, as matters of record. And both are also presented in ways that ignore or elide the physical—that is, the bibliographic—properties of documents that I argued in chapter 3 were so at issue in U.S. culture just a few decades ago. What has happened? One might say that users of the World Wide Web today resemble the students in an art history lecture who sit facing a screen and consuming slides of prints of paintings as if they were the actual paintings themselves. Students know they are not seeing real paintings, of course, but the habitual contexts of display suggest otherwise.[7] Or one might say that users of the World Wide Web today resemble the characters in a Don DeLillo novel (1985) who are visiting and taking pictures of a tourist attraction known as "The Most Photographed Barn in America," since the attraction becomes increasingly reified, more and more "most photographed"—consider, "least recently modified"—and less and less crucially a physical barn. These analogies aren't perfect but do help to portray how, as David Weinberger (2002, 35) puts it with such gleeful imprecision, "Web documents are weird."

This chapter seeks to describe and contextualize the weirdness of documents on the World Wide Web. In particular, it asks how electronic documents work as evidence, and how the World Wide Web both is and is not a temporal medium. These questions have

profound implications for the ongoing definition of publication, and thus of contemporary media publics and public memory. My ungainly chapter title, "New Media </Body>," uses an HTML tag to revise the title of chapter 3 ("New Media Bodies"), and in doing so underscores that bibliographic facticity seems curiously mystified in the digital environment. Web pages today regularly have explicit bodies, content, and markup wedged between two tags, <body> and </body>. And according to the W3C, the whole World Wide Web itself has "a body of software."[8] But these bodies are not easily discerned as or in relation to either bibliographic fact or historical evidence. The body of a Web page stands in distinction from its header, regularly indicated by the tags <head> and </head>, as well as from a line of HTML that self-describes the HTML version information or document-type definition required for browsers to display the page. These "bodies" are not actual texts, then; they are only one part of one kind of text available to users of the Internet, where the ontology of text itself (What *is* electronic text, after all?) remains open to question, even—or especially—among scholars for whom textual criticism and textual editing are specialties.[9]

The subject of historical evidence has lurked in the background throughout the previous chapters, the last of which describes a particular and particularly broad context for the origins of distributed digital networks in the United States. The current chapter pulls questions of evidence to the foreground in order to return to the issues of reflexivity addressed briefly in the introduction above. How are media the subjects of history when doing history depends on so many tacit conditions of mediation? More specifically, how might present attempts to historicize the Web be complicated by the uses and characteristics of the Web itself? How does or how can the Web work as evidence of its own past? While this chapter calls on the introduction, it also stands as a sequel to the previous chapter, in which the "Scenarios for Using the ARPANET" suggest so much about the social, intellectual, and political contexts of 1968–1972, but so little about today's cyberreality. Like chapter 2 ("New Media Users") in relation to chapter 1 ("New Media Publics"), the present chapter pursues the emergent social meanings of a new medium among its uses and users. Chapter 2 follows the new medium of recorded sound into the varied cultural economy within which it became defined primarily as a mechanical amusement for the repetition of prerecorded musical records. The present chapter follows the new medium of digital networks into the varied cultural economy within which the global Internet is commonsensical according to the continuing variety and intensity of its uses, among them the creation, transmission, and display of electronic documents, if also the

contested circulation of musical files, the buzz of e-commerce, the instantiation of virtual communities and social networks, and all of the other forms of "knowledge work" that the Internet has so recently come to demand.[10]

Let me be clear about my vocabulary. I am using the term Web *page* to refer to files written in markup language that have URLs and can be displayed on screen by a web browser in keeping with the client/server architecture of the World Wide Web. "The World Wide Web of the 1990s foregrounded the page as a basic unit of data organization," notes Lev Manovich (2001, 16), even though these new pages commonly contain many elements beyond those of the traditional codex page, including sound and moving images. Recently it has also become common for Web pages to contain dynamic content—that is, content unique to a session and a user because generated by a gateway application and database that are used to produce a menu of search results, like a list of images from the *Times* or a list of auctions on eBay, or used to produce customized pages, like those that greet repeat customers at Amazon and follow them around with a shopping cart. A Web page, to generalize, is thus partly a matter of format and partly a matter of delivery. According to this definition, the World Wide Web contains or points to many elements that are not specifically Web pages, and many Web pages contain elements—sounds, images, applets, and applications—that are not written in markup language but are named within a page that is. There are private pages and public ones; there are searchable, surface pages and "deep" pages that cannot yet be crawled and therefore searched by Google or its competitors.

In contrast to the word *page,* I am using the term electronic *document* without reference to format. As the observations of the previous chapter make clear, an electronic document cannot be identified with any exclusive material property, any bibliographic difference that distinguishes it from other electronic objects; it can only be identified according to its cultural standing, its meaning, within the social network of its potential circulation. An electronic document is any electronic object that is used to document, that stands as a potential ally in explanation. So while the Web page is "a basic unit of data organization," an electronic document is Licklider's "item of basic interest." One is an issue of format, and the other is an issue of context, a matter of concern.[11] So some Web pages work as electronic documents (for example, the "least recently modified" page above), while some pages more importantly point to documents (ProQuest points to images of the *Times*). The World Wide Web itself might even be called "the largest document ever written," if it is called that within a context where its own meaning as such is at stake, as it is today for archivists concerned with preserving the Web for future researchers.[12]

When I use the word *today,* I mean "as of this writing" (2005), and I am cognizant of the humility that requires, since readers—as of their reading—will know so much more. By *history,* I mean to invoke the limited sense in which doing history means putting together narratives about events (also "history") based on interpreting the "indexical survivals" or inscriptions that form a fragmentary record of the past. Put this way, history is not a science but a hermeneutic, an interpretive mode sutured to a disciplinary practice.[13] It is the province of the humanities proper, the scholarly fields, cultural institutions, and social practices that attend—construct, perpetuate—and interpret the past. History as such has had its own modern history coincident with and somehow codetermined by modern inscriptive media, particularly cinema in Philip Rosen's (1994, xix, 143) recent account, and particularly photography in Walter Benjamin's.[14] And—no surprise—history has lately been mourned by critics on both the Left and Right, as another victim of postmodernism. Cellular phones, news crawls, and channel and Web surfing help to promote and transfigure the synchronic, inspiring what Fredric Jameson (2003, 707) calls a "new nonchronological and nontemporal pattern." Everything happens all at once. But digital media are not just agents of postmodernism in such accounts, they are equally its expressions: "What could not be mapped cognitively in the world of modernism now slowly brightens into the very circuits of the new transnational cybernetic" (701). This is a particularly bleak view that underscores the present importance of questions like the ones framed here. Is the history of media—or indeed, the history of *anything*—possible amid the synchronous postmodern glare?

Just as critical theory thus maps its own course against the history of media and the meaning of *history,* related tussles over the same term have abounded in public culture more broadly, during the so-called culture wars of the 1990s in particular. By this light, the World Wide Web emerged to popular consciousness—the Mosaic browser in 1993, and the Netscape IPO in 1995—at the same time that vitriolic disputes erupted over the National History Standards Project (1994), for instance, as well as the Smithsonian Institution's Enola Gay exhibit (1994–1995) and Disney's plans for a theme park near Civil War battlefields in Virginia (1994). Less controversial but just as telling, *history* simultaneously signified and continues to signify a competitive array of consumer goods, the bourgeois uses of culture enabled and in a sense "overproduced" by heritage sites as well as television, video, and cinema, by the History Channel (1995–), for instance, as well as variously "historical" films like Oliver Stone's *JFK* (1991), Steven Spielberg's *Schindler's List* (1993), and Robert Zemeckis's *Forrest Gump* (1994).[15] In the heightened rhetoric of the 1990s, the Web was either a "brave new world or [a] blind alley." The most troubling

feature of the Internet for the culture warriors was the pervasive lack of distinction made on the network between "the true and the false, the important and the trivial, the enduring and the ephemeral."[16] Many, on the Left and Right, had just the same criticisms of *JFK, Schindler,* and *Gump.*[17]

Lastly, by *the Internet* and *the World Wide Web,* I mean both the architecture of each network as well as the massive diversity of material they differently connect and contain. (Internet architecture includes both hardware and software, while the architecture of the World Wide Web consists of software that works on and via the hardware of the Internet.) Size and complexity both call for much more humility, since no single chapter, no single book, can really address or analyze the whole Web. In fact, analyzing the World Wide Web curiously resembles making a Web page. This is not to resuscitate "obsolete" accounts of readers supposedly empowered by hypertext because they can choose which links to follow.[18] Rather, it is to notice the obvious: every analysis of the World Wide Web—including the present one—selects examples, quotes excerpts, and assembles links. Making a Web page means—in part—doing just the same sorts of things: selecting and pasting in content as well as assembling links. The mirror effect should cause anxiety. Like an assiduous anthologist, the Web critic's presumptive "ambition to represent a whole through its parts is always undermined by readers' awareness that the parts have been chosen for their difference from those left out" (Price 2000, 6).[19] This is one reason why Jeffrey Sconce (2003, 191) is so right to question what he dubs "the more vapory wing of new media studies" for its rapt attention to digital artworks or examples of Net art "as evidence of significant transformations in culture and society." Selecting singular examples from the World Wide Web in order to support claims about the Web or digital culture as a whole is a lot like manufacturing one's own evidence, minting one's own coin. Of course, criticism of all kinds depends on the critic's discretion, on a reasoned and reasonable balance struck between the representative and the anomalous. But the sheer size and diversity of the World Wide Web suggests that in this case, balance might be a rank impossibility.

One hedge against the "cult of the anomaly" (Price 2000, 6) or runaway "anomaly fatigue" (Weinberger 2002, 15) is to take a longer view, to focus on tools, methods, and protocols rather than the dubious exemplarity of Web pages themselves. Another strategy is to turn anomaly against itself, to concentrate on error or errant results, like the Internet of 1854, which can reveal the assumptions that lie behind different uses of the Web. As Carlo Ginzburg (2004, 556) puts it, no stipulated "norm can predict the full range of its transgressions; transgressions and anomalies, on the contrary, always imply the norm and therefore urge us to take it into account as well. This is why a research strategy based on blurred edges, mistakes, and anomalies seems" so rewarding. By the same token, John Unsworth has urged the creators of hypertext projects—electronic editions and archives—to document their failures "with obsessive care, detail, and rigor." Only with a clear sense of what has gone wrong and what can go wrong will it become certain that new knowledge is being evolved, whether about electronic editions and archives or about and entailing the electronic documents they contain.[20]

This chapter is organized around a series of errors or pitfalls that have emerged to date among the varied uses of the World Wide Web. Some are more easily recognized as human errors than others, but that shouldn't matter. Like the Internet of 1854, the uses (and potential misuses) of the Web point gamely to a host of assumptions shared by users, and negotiated in the unceasing growth and variety of the network as a context for meaning and a medium of communication. Because they are process oriented at multiple levels, the errors I consider help to supplement any consideration of existing Web sites—"cool" or explicitly "historical" sites, for example. Considering groups of Web sites stands to offer a suggestive sense of the Web as a synchronic form, existing more in moments of access. By hinting at process, however, the study of errors offers the Web as it exists more certainly across time and amid the temporality of labor: the work of accessing and searching, yes, but also the differently capitalized work of scanning, programming, cabling, linking, writing, designing, citing, and so on. The temporality of labor broadens Alan Liu's (2004a, 393) "class concept" of knowledge work to include the offshore data-entry technicians who so recently invented the Internet of 1854, the microphotography technicians who invented it before that, and the printers of 1854 who, just as unknowing, also helped to invent the same marvelous chimera.[21] I will argue that far from making history impossible, the interpretive space of the World Wide Web can prompt history in exciting new ways. Sound recording certainly did the same thing too, though that has long been rendered invisible by the unattended norms that produced the intuitive facticity of records and recording.

Error: File Not Found

The most persistent and consistently recognizable error confronted by users of the World Wide Web today is of course Error 404. When a user selects an outdated hyperlink or mistypes a URL, indicating the address of a Web server but not a viable page, the result is a transfer status code, "Error 404: Not Found." Different browsers handle this code

differently, and different sites and servers offer their own versions of an error page. Like the subtle confusion of agency that emerges in the association of OCR scanning and human reading, Error 404 does not specify who committed or what caused the error to occur. It implies a dizzying potential for mistakes—more than four hundred different kinds—but stops short of laying any blame. It answers a particular request with a denial that affirms the constancy and ubiquity of the Web's administration, which is at once authoritative and impersonal—a system of protocols, really, that is seldom acknowledged but always present. Corresponding error messages, like the prefatory announcements on early phonograph records, hail users individually but are not by or from anyone in particular. Even when a Web master or systems operator replaces the generic error message with a server-specific version, she does so as a ventriloquist, speaking with the impersonal, authoritative voice of Web administration itself—a voice that reventriloquizes the impersonal authority that has so long hailed and conscripted its subjects to the mediated public: "post no bills"; "all circuits are busy"; "stay tuned for more." The Web administrator might offer to send users to another page on the same server, might promote the use of a search engine, or—in the dark humor surrounding the U.S. invasion of Iraq in 2004, for instance—might indicate that weapons of mass destruction have not been found.[22] Such humor works according to its incongruity or impertinence, but also according to the dispersed, impersonal mode of address that familiarly renders "have not been found" and "cannot be displayed" with such neutral authority.

The constancy and ubiquity of the administrative authority implied by the Error 404 status code stand in stark contrast to the primary cause of this errant result: Error 404 proliferates on the Web because the Web is constantly changing; pages are moved or deleted and links go out of date. When Brewster Kahle began the Internet Archive in 1996, he reported that Web pages remained online for an average of 75 days without being changed, moved, or deleted. Another account based on data from 2000 claims that "the average life span of a Web page is only 44 days," and since then Kahle has been widely quoted as saying that pages now live an average of 100 days.[23] Whatever the precise figure, and whatever its rate of change, change itself is a paradoxically consistent feature of the World Wide Web. And that causes particular difficulty for the varied users and uses of electronic documents.

A document stands as a potential ally in explanation when it is cited as meaningful and pertinent, and thus invoked within the public of its potential circulation. But the fluidity of additions, deletions, and modifications to the Web has helped to put such commonsense notions of "standing as"—of citing, and of public and publication—into confusion.

Some Web-based documents are far less perishable than Kahle's average Web page, but Error 404 still occurs with predictable frequency. For example, researchers have examined all of the articles "accepted in 2003 by the communication-technology division of the Association for Education in Journalism and Mass Communication," checking to see how many URLs in their citations remained viable. They estimate a "half-life" of roughly fifteen months. That is, researchers predict that half of all the links cited in any one article will be obsolete after that much time. The comparable half-life for citations in abstracts on Medline, the National Library of Medicine's database, has been estimated at seven years.[24] The differences between forty-four days, fifteen months, and seven years can be explained by disciplinary and institutional infrastructure: medicine and the National Library of Medicine both encourage continuity in a way that pedagogical trends in journalism and the Association for Education in Journalism and Mass Communication do not, as well as in ways that cannot directly attend the extraordinary diversity of "average Web pages" more broadly. Half-lives in any case measure the rate at which relevant publication contexts decay, suggesting an erosion—however uneven—of the public that defines and is mutually defined by Web publication.

Interestingly, if medical documents persist for relatively long periods of time on the Web, documents more explicitly about the history of the digital medium itself may fall a lot closer to Kahle's average. Different attempts are being made to preserve digital resources, but results are far from certain.[25] Paul E. Ceruzzi's (2003, 302) authoritative *History of Modern Computing* explains, "By January 1993 [Marc] Andreessen and [Eric] Bina had written an early version of a browser they would later call Mosaic, and they released a version of it over the Internet." But Ceruzzi's accompanying citation demurs, "Some of Andreesen's postings on the Internet have been preserved in an electronic archive. Since there is no way of knowing how long this material will be preserved, or whether it will remain accessible to scholars, I have not cited it here" (303, n. 50). Paradoxically, "it's still too early" (406), Cerruzi says, to tell the story of the Web, but the persistence of Error 404 indicates that it may also already be too late. The W3C's "Little History" of the Web must be little partly for this reason.

Error: Incorrect Formatting

If expired links whisper "too late," then the evolving standards for citing electronic documents murmur "too early." How can students or scholars begin to make documents stand as allies when the simple mechanics of standing remain in question? At one level,

the characteristic mode of citation on the Web is a matter of making hyperlinks and pasting in URLs, creating "bookmarks" or adding "favorites." But when users like Ceruzzi wish to cite documents with more precision or on paper, they face another daunting array of potential errors, judging at least from the tangle of citation formats recommended by successive editions of the style manuals that have been published to guide them. Different guidelines for citation suggest different postures for "standing as," and can therefore reflect different assumptions about matters of evidence and issues of concern. (Too early and too late: uneasy in the face of just this contradiction, I have cited electronic sources in my endnotes below, along with archival resources, but the references that follow them contain only print publications.)

The first manual to attempt a systematic set of guidelines was Xia Li and Nancy B. Crane's *Electronic Style,* published in 1993. It was revised as *Electronic Styles,* plural, in 1996, when its authors added suggestions for citing from the Web, letter E in this excerpt from their table of contents:

A. CD-ROM and Commercial Online Databases
B. E-mail
   a. Archived Works
   b. Real-Time Works
C. FTP
D. Gopher
E. HTTP
F. Telnet
G. USENET
H. WAIS

This breakdown captures something of the confusion that users of the Internet faced in 1996, even apart from the problem of citing electronic sources. Li and Crane divide documents partly by mode of discovery (WAIS, for instance), partly by modes of delivery (e-mail, say), and partly by storage medium (CD-ROM, for example). None of this makes much sense today. Categorizing the Web according to its transfer protocol (HTTP) keeps it parallel to the Internet's file transfer protocol (FTP), but does little to acknowledge the distinctiveness of the Web as networked hypertext. Like "Gopherspace," "World-Wide Web"—as it was then frequently spelled, without the definite article "the"—offered early users much more than an experience of data transfer.

Li and Crane (1996, xv–xviii) give "embellished" versions of American Psychological Association (APA)–style citations (1993 and 1996) and MLA-style citations (1996) for electronic documents. The authors' embellishments are avowedly provisional; "Let's at least put something out there for the masses to use," they are reported to have ventured, "We [on the Net] are in dire straits." One librarian who reviewed *Electronic Style* protested its expedient, inductive approach: "Why have the authors given no reasoning for their recommendations? Why have they not recognized that an entirely new medium of communication requires discursive treatment, and not prescriptive examples by rote? . . . We need a rationale for a new system, not simply a cookbook."[26] Questions, proposals, and further discussion continued to populate newsgroups, listservs, and other online forums, overwhelming observers, while publishers, the APA, the MLA, and others have been busy producing and revising style sheets ever since.[27] In his hilarious review of the latest edition of the *Chicago Manual of Style* (2003), Louis Menand (2003, 125) complains about "the aggravating business of citing a Web page," noting about such matters, "The problem isn't that there are cases that fall outside the rules. The problem is that *there is a rule for every case.*" Bleary-eyed students with term papers to finish are stymied by too many choices, the same kind of problem that today "makes a hell of . . . shopping for orange juice: Original, Grovestand, Home Style, Low Acid, Orange Banana, Extra Calcium, PulpFree, Lotsa Pulp, and so on."

Guidelines for citation have always been arcane and multiform. They develop over time, as *Chicago*'s fifteen editions demonstrate. They vary by discipline, as the differing requirements of the APA and the MLA attest. And within each variation they vary by format—separate guidelines for citing journal articles, encyclopedia entries, oral histories, monographs, television programs, and so on, now confusingly joined by electronic formats like e-mail and Web pages. Complaints about the inductive or cookbook, case-oriented strategies of the style manuals are really about the profusion of forms and media, but they also more particularly concern the rhetoric of the respective disciplines that have failed to exert transparent, deductive reason over—have failed to discipline—the same profusion. How can Li and Crane's "masses" or Menand's bleary-eyed coed hope to prosper, when the very authors and editors of so many manuals cannot dare to hope for complete and final intellectual control over the ongoing flux? Contemplating *Chicago's* 956 pages, Menand concludes, "The *Manual* is not too long. It is not long enough. It will never be long enough" (126). Each new edition will address itself to more and more publication formats, more and more varieties of orange juice, while a total theory of documents and a final system for documentation remain forever out of reach.

Despite the implication of so many manuals of style, format is not—again—what matters about documents. (Here's where orange juice and documents are not alike.) Remember that users of ProQuest and the microfilm *Times* can still cite an image of the paper as if it were newsprint: byline, headline, *"New York Times,"* date, section, and page number. Similarly, the users of the RFC database on the Internet today cite transcribed or imported nroffed text files as if they were actually the earliest RFCs (see chapter 3 above). And scholars use hefty bound versions of Victorian periodicals without any more than passing acknowledgment of the ephemeral single issues that the Victorians really read. "We may want to resist this tradition," writes Margaret Beetham (1990, 23), "but we cannot escape it" entirely. Footnotes habitually foreclose or disavow the long histories—and the labor—of preservation and migration that have made works like the *Times,* RFCs, and *Blackwood's* available in different formats, because those long histories are not as important to authors or their presumed readers as the standing of such works as allies amid the public of their potential circulation. And if such footnotes foreclose media history, the popular discourse that lacks footnotes altogether of course forecloses even more: most spectacularly, there is the huge and habitual failure of so many Web pages to note or nod toward origin or provenance for the images and other elements they contain.

What is it about some documents, like the *Times* or RFCs, that makes material format so obviously incidental to their standing as allies in explanation? Different texts or versions of the *Times* and RFCs function so well as evidence because each work exists already as public record, standing within a robust discourse that is familiarly "punctual" in Michael Warner's (2002, 97) terms:

> Public discourse indexes itself temporally with respect to moments of publication and a common calendar of circulation. [And] one way the Internet and other new media may be profoundly changing the public sphere is through the change they imply in temporality. Highly mediated and highly capitalized forms of circulation are increasingly organized as continuous ("24/7 instant access") rather than punctual. At the time of this writing, Web discourse has very little of the citational field that would allow us to speak of it as a discourse unfolding through time. Once a Web site is up, it can be hard to tell how recently it was posted or revised or how long it will continue to be posted.

Format takes second place to context, to the social imaginary of potential circulation that must rely on commonsense norms of publication, including the periodicity of periodicals, journals, and broadcast programming; the partly calendrical logic of film, album, and video releases; and the experience of editions (and remainders) as such.[28] According to this analysis, Error 404 and the perishable quality of the Web may not be the most important question for historians and archivists to tackle. More urgent may be the evolution of a shared sense of Web publication as an event that can reliably be located and experienced in time, without error or exception.

Some Web publications do come dated in reliable ways, like electronic journals, so many date-stamped bulletin board postings, and elements of the rapidly growing blogosphere. But the punctual logic these forms adapt from print fails or falters elsewhere on the Web, where perhaps only Google's monthly updates offer users a tacit knowledge of Web publication as an event that exists definitively in time. Indeed, dates of update seem to be the most prevalent dates on the network, begging a chronology that is ever refreshed and refreshable, but rarely anchored against an explicit calendar of publication or circulation. Many have called for a way to certify whoness on the Internet—with electronic signatures or proprietary watermarks, for instance.[29] Yet the problem of whenness looms at least as large.

The Wayback Machine at the Internet Archive (<www.archive.org>) does allow users to see the pages at a particular URL specifically as they were on different dates in the past, and thus would seem to confound the continuous present of the Web. The Wayback Machine grounds its users' experience of the World Wide Web in time, as if they were flipping through back issues of a periodical, only their search results are neither strictly periodic nor completely bound by temporal logic. Users type in a URL and receive a consecutive list of random dates at which Alexa Internet's Web crawler has captured versions of that page. The resulting pages—sans JavaScript and other dynamic elements—are presented as time-specific artifacts, but the Internet Archive cannot itself generate the punctual logic that Web publication resists or denies. When users view pages from the past, captured to the archive's present servers, the relative extent and completeness of each past page is never obvious. Where will the edges and the empty "data islands" of each past document on the present Web be found? "Remember what Yahoo looked like in 1996?" rhapsodized one early account, appreciating the naive, uncluttered look of the early Web portals.[30] But search the Web using the Yahoo portal from 1996 and the results produced are today's Yahoo results. This archive is shaped like a Möbius strip. The Internet Archive servers are both of and on the World Wide Web that their collections seek to document, and like the "least recently modified" Web page, there is something oddly and unidentifiably present about the past to which the Wayback Machine promises to transport its users (though, like ProQuest, the Wayback Machine remains a wonderful resource).

The question of Web publication as an *event*—that "most condensed and semantically wealthy unit of time" (Doane 2002, 28)—must be posed in relation to other forms of publication, other media, and the medium-specific sense in which events are made public on the Web. This connection between publication-as-event and events-made-public is not transparent but is crucial to the experience of media in time and therefore in history. Like the serial media that it partially incorporates or "remediates," the Web represents time and simultaneously produces temporalities for its users; it records and performs.[31] Recording and performance diverge, in most cases, in the time lag between saving data and browsing through it. One happens, and then the other happens. Recording and performance are distinct when users play an MP3 a QuickTime file, for example, or display electronic text. But recording and performance also converge in important instances, as in the varied constructions of "real time" for webcam feeds as well as in experiences of interactivity more broadly. Neither divergence nor convergence is simple. On the one hand, the temporality of the Web resembles what Mary Ann Doane (2002, 28) calls "the indeterminacy, the instability and imprecision of cinematic time," and on the other hand, it evokes what Mark Williams (2003, 163) calls "the oddly protean temporality of television," which is so marked by live broadcasting.[32] The latter case, at least, may appear to have little to do with electronic documents, but real time on the web both represents and produces the instantaneity or the sense of present into which documents are published, and thus it helps to structure publication as an event.

Like television's *liveness,* however, the *real time* of the Web is an intricate construction. "Both terms are grounded in the capacity for electronic media to represent something at roughly the same moment it occurs," explains Williams (2003, 163), "But each term, in significantly different registers, also designates a key dynamic of disavowal, in that each names an act of mediation but also the desire to experience this act as unmediated" and unlabored, immediately lived and immediately real. Real time is more of an effect, then, an experience of data "on the fly," than it is the literal copresence or cotemporality of users and events. And the instantaneity that real time represents and produces is not always exactly instantaneous either—at least not yet. The real-time media effect is "propped onto the near future," Williams says: it offers a sense of present that depends in part on the fattest possible bandwidth and fastest possible downloads, which remain more dreamed than everywhere accomplished (163). Soon but not yet is the eternal promise, evident in the jerky miniatures of QuickTime "movies" that "struggle against (as they struggle to become) cinema," according to Vivian Sobchack (2004, 307); and evident even more pervasively in the intermittent delays of Web surfing, where traffic on the network and files of various sizes result in unpredictable load times and varying degrees of user aggravation—at least for now.[33] "Online temporality," Alan Liu (2004a, 225) notes, "amounts to antidesign" because of this unpredictability.[34]

If the real time of the network were real, every click would instantly gratify, since clicking is the user's most certain experience of an instant in time. Each click is performed by user and machine together at their point of closest physical contact—digit to digital—and those present instants are simultaneously recorded into "history," according to the parlance of the Mosaic browser and now of Microsoft.[35] Like the "back" command all browsers share or the "undo" command editing programs often include, Internet Explorer's "history" button chronicles consecutive instants in time, distinguishing them as places, sites of performance, once present and now past.

Documents can be published into the instantaneity of real time on the Web in fairly short order, with a few simple clicks: it will take "about 10 minutes worth of work, not even," explained the project manager of the William Blake Archive to the project's editors in July 1997, for example. The William Blake Archive is a project that began in June 1995 to publish digital facsimiles of Blake's work along with tools and apparatus to support Blake scholarship. Editors and programmers working with or at the University of Virginia's Institute for Advanced Technology in the Humanities (IATH) labored steadily, designing the archive, writing code, collecting and marking up text, and scanning and tweaking images. After two years, they were finally ready to publish their first Blake work: an electronic edition of a single copy of Blake's *The Book of Thel,* known as Thel F. "Publication entails two sets of actions," wrote the project manager in an e-mail to the project's private list; "I need to create live links to the Search page, Thel F itself, the bibliographies, and the new archive update, and drop the warning screens down in front of" the pages still not ready for publication, and "we need to publicize the Archive by sending copies of the update to relevant listservs."[36] The first task was accomplished Friday afternoon, August 1, and the second waited until Monday, August 4. The electronic edition of Thel F was published and publicized.

Error: Private and *Public*

The William Blake Archive is likely one of the most exacting and well-documented publication projects on the Web as well as one of the most self-conscious, so it offers a rare opportunity to look inside the publication process and think about publication as an event. Whether it is properly an "archive" may be debated, but the William Blake Archive

resonates with questions of preservation, preservability, and dissemination that the previous chapters have encountered in relation to both voices and thoughts from the past: voices "captured" onto tinfoil and wax; thoughts expressed typographically in critical editions or alphanumerically in speculative libraries of the future. As a noncommercial publication project connected with a state research university, the William Blake Archive helps to promote the Web as a public arena for what IATH and others have termed the "digital humanities." This distinguishes it from so many commercial uses of the Web today, but both commercial and noncommercial users with a Web presence must depend on acts and events of making public.

Clearly, the publication of the William Blake Archive "Thel F: The Electronic Edition" was massively "front-loaded"; it depended on years of labor by a team of scholars—the results of which only fully became public with the creation of "live links" between the existing William Blake Archive Web page, Thel F, and its accompanying apparatus. All publication forms are front-loaded—think of writing and editing a novel before it gets sent to press, or shooting and editing a movie before it goes to theaters—but the transition from private to public is rarely this easy. Publishing on the Web is so easy, in fact, that it sometimes happens accidentally—for example, when a designer for CNN's Web site unintentionally published links to the in-progress obituaries of Vice President Dick Cheney, Fidel Castro, Nelson Mandela, and other still-living public figures. The obituaries were on an internal, private site that was not password protected, so publishing the URL was publishing the page. In this case, the event of publication and the publication of events together proved untimely.[37]

Like those pending death notices, the William Blake Archive Thel F was already there, already present on the IATH servers, and it was already named on the William Blake Archive Web page, only now it was called into public through the act of linking, where it could be publicized to the "relevant listservs" that were presumed to attend and partly to produce the public of its potential circulation. Thel F would then produce its own public too, which the main archive page addresses with an emphatic "WELCOME," whether users visit "for pleasure, study, or intensive research." That public has emerged gradually since 1997 according to interest and opportunity, but also according to rules for reasoned behavior in public. The main archive page outlines a set of conditions—albeit largely unenforceable—for use and reuse of its contents, and it warns, "By accessing the Archive, you acknowledge that you have read and accepted these conditions."[38] Merely to access Thel F is to subscribe to the decorum its editors specify.

As an explicit extension of that decorum, several months after the publication of Thel F, the editors amended the main archive page to include a preferred citation format, formalizing the identity of the edition comprised of documents as follows:

> Blake, William. The Book of Thel, copy F, pl. 2. The William Blake Archive. Ed. Morris Eaves, Robert N. Essick, and Joseph Viscomi. **13 November 1997** <http://www.blakearchive.org/>.

Though it probably represents the date this example was composed, the November date (emphasis added) included in the sample citation is supposed to be a date of access, according to the editors' instructions, to be rolled forward by any user of Thel F, plate 2. (Like Licklider's hypothetical session on a procognitive system, the William Blake Archive editors interpolate their own present into a speculative future.) Neither the date of Blake's original printing in 1795 nor that of the "live links" established on August 1, 1997, forms part of this citation. The URL points to the main archive page, associating the digital image of plate 2 with the larger context of its electronic publication. That context appears both in-progress and eternal, publishing Thel F and other documents into an instantaneity that extends "for the foreseeable future" (Kirschenbaum 1998, 239), and welcoming users to the archive in and into a continual, continuous present tense.[39]

The continuous present tense within which the William Blake Archive and similar editions exist on the Web resonates less with the instantaneity of the real-time effects that attend them than with the cultural logic of timelessness, whereby canonical figures like Blake stand as rich and enriching subjects of inquiry. Like Edison's Washingtons, Lincolns, and Gladstones (1878), that is, or Project Gutenberg's Declaration of Independence (1971), and the continual flogging of "opera" records by the early-century phonograph companies, the William Blake Archive is helping to make a new medium authoritative in a sense by co-opting cultural authority, by entwining the new means and existing subjects of public memory (as well as, of course, by invoking the authority of institutions like IATH, its sponsors, and the participating Blake repositories). But the present of Web publication in general can hardly resonate with the alleged timelessness of "the classics" when so many of its subjects are noncanonical, commercial, or banal. Its continual continuousness must be plumbed beyond the subjects of its pages.

Lacking the cultural, institutional, and financial capital of outlets like IATH (or CNN), everyday users of the Web today create Web pages by themselves, using one or another of the available off-the-shelf, WYSIWYG editing programs, like Microsoft's FrontPage or

Macromedia's Dreamweaver, and then posting the results to a commercial Web server. In his analysis of the "interface metaphors" that characterize Macromedia products, Tarleton Gillespie (2003, 119, 115, 113) notes some of the ways that users, aware or not, are constrained by the terminology, defaults, and menu options built into such software. One telling—if idiosyncratic—result of the constraint they experience is the frequency with which users have accidentally published Macromedia examples. Dreamweaver includes a tutorial that walks users through the creation of a Web site for an imaginary coffee shop named Scaal. Gillespie used a search engine to look for *scaal* and found hundreds of sites called "Scaal Home Page." "A few were exact copies of the Dreamweaver tutorial site," he explains; "presumably, someone was practicing and inadvertently posted the pages to their public server. The majority were actual websites, for different products and interests; it was clear that these users had generated their sites by modifying the HTML (hypertext mark-up language) code from the tutorial, but had failed to change the title of the homepage." These imaginary coffee shops lie scattered like ghost towns in the continuous present of the Web, sometimes a whole shop, but usually just a leftover sign hanging on top of a window.

Like CNN's premature obituaries, the Scaal sites again affirm the relative ease of publication on the Web, where private and public coexist, and the distinction between them is not intuitive, not present, for all users at all times: the present presentness of Web publication varies according to users' attention and expertise. More important, though, the Scaal sites suggest that data and metadata exist at different registers of public and publication. That is, users publish their own pages called Scaal Home Page when they alter the <body> the tutorial gives them, but leave something of its <head> unchanged. Encouraged—that is, constrained—by user-friendly WYSIWYG editing tools, users have accidentally distinguished the publication of their page from the publication of its encoded self-description. Like so many other errors, their mistake points toward underlying assumptions and unanswered questions that attend electronic documents more broadly.

All digital objects contain data and metadata. Corporations and allied institutions usually have much more invested in metadata than individual users do (users of Dreamweaver can largely ignore markup, for example, because the program modifies HTML tags to reflect their design choices), but metadata is always present, whether the digital object in question is a packet, file, message, or page. Even tangible digital objects, storage media like diskettes and DVDs, require metadata. All of the information on a DVD that users watch are data; the information they do not watch are metadata. Some metadata become visible in menus and titles, but a lot more remain unseen. For instance, every DVD includes an arbitrary chunk of information about its anticipated location, since the Motion Picture Association of America made manufacturers divide the globe into six regions. As part of corporate efforts to control piracy, DVD players are only able to play DVDs from their own region. Are those chunks of information literally part of the "movies" that users watch? The question may seem pointless to movie fans, but related questions about the relationships of data to metadata have consumed scholars who design and publish electronic archives and editions. What is "the conceptual status of markup?" Dino Buzzetti probes; "Is it a sort of metalinguistic description, or is it a direct expansion of our writing system employed to express intrinsic features of textual content?" At stake is the very being of "the 'text' itself." Either markup is not part of the text or it is.[40]

Scaal errors notwithstanding, it would seem that publishing a Web page or related digital object is publishing its markup, rarely viewed but always there. Data and metadata are inseparable. The facsimile images published within the William Blake Archive, for instance, each come salted with textual metadata, bibliographic information about the original engraving that the image represents, and information about its production process: the date the image was scanned, from which source medium, and with what technical specifications, hardware, software, file size, resolution, and so on. This information travels everywhere the image does. Though "an image file is typically thought of as consisting of nothing but information about the image itself—the composition of its pixilated bitmap, essentially" (Kirschenbaum 1998, 240)—these JPEG files consist in part of carefully detailed production records, which remain hidden from view unless interested or particularly "responsible" users go looking for them.[41] But if these textual metadata always adhere backstage, in effect, they can also always be redescribed by the editors and programmers to contain more or different information. Two months *after* they published Thel F in August 1997, for example, the editors worked on revising the markup terms and templates that pertained.[42] Today, the electronic edition of Thel F is nowhere dated 1997; it is dated summer 2000 on a "Revision History" page that identifies the season of its "conversion to Blake Archive Description DTD 2.1." For now, at least, the August 1, 1997, publication of Thel F may only be documented as a discrete event in the history of the World Wide Web according to archival copies of the editors' private e-mails, which can be had either by soliciting and arranging access to private electronic files, or by flying to Minneapolis to consult copies that were printed out and deposited in a conventional archive, processed and preserved in boxes by the Charles Babbage Institute at the University of Minnesota.[43]

The "Blake Archive Description DTD" defines the markup elements for documents specific to the William Blake Archive. "Thel F: The Electronic Edition"—comprised of

data and metadata—was published and then revised, when editors and programmers added new fields for more metadata, and made adjustments to the relationships between data and metadata. Revisions to the DTD were incremental, proceeding as part of the work of editing different Blake texts, but once a substantial number of changes had been made, the published Thel F data were converted to the new version, DTD 2.1. Here, for instance, are the opening lines of the DTD published by Jerome McGann (1996, 159–160) for documents in the Rossetti Archive, another project at IATH:

```
<!–This is the DTD for the Rossetti Archive document
(rad) structure–>
<!–revised: 6 Oct 94 to add titlePage tags (seg)–>
<!–revised: 9 Mar 95 to add r attr to l, lg and lv
(seg)–>
<!–revised: 25 Apr 95 to add gap and orn.lb tags
(seg)–>
. . .
<!–revised: 15 Jan 96 to change commentaries to
generic sections
and "." style names to Caps style
and rad to header and text (including group)–>
```

As McGann (2001, 91–94, 13) explains, not every change to the Rossetti Archive is reflected here, and some of these revisions are more significant than others. The important revision of March 1995, for instance, introduced a scheme for collating Dante Gabriel Rossetti's texts and automatically identifying variant versions among multiple documents. Each revision, however incremental, better represents or allows access to Rossetti's own "obsessive" revisions.

My purpose is not to belabor the arcane, or intervene into ongoing discussions of SGML, XML, or specific formats and encoding strategies, but rather to elaborate some of the complexities of Web publication as an event. Not only do Web publications in general appear to compromise or eschew the punctual logic of more conventional public discourse but the different components those publications possess are differently public: data and metadata are at once mutually copresent and versioned according to separate calendars. And since metadata are precisely "meta-," their revision process reflects an author's, editor's, or programmer's ongoing reinterpretation of the data in question. Users might alter or correct a <head>, for instance, to better fit their evolved understanding

of its <body> or the relationships that headers and bodies share. This is what makes an electronic archive or edition, and ultimately—I would argue—the World Wide Web itself, into what McGann (2001, 11) calls "a machine for exploring the nature of textuality." And once the machine is running, it becomes all but impossible to experience Web publication as a bounded event within a punctual discourse. Even the most exactingly self-conscious, intensively authored and attended publications on the Web, those scholarly electronic editions and archives, tend to exist in a sea of installments, versions, and revisions, works continuously present and yet constantly subject to change. Versions and revisions—long the raison d'être of critical editing—are now also among its ongoing and unapologetic results.

However marked the World Wide Web may be by dates and updates, by versioning and revision, however pocked it may be by expired links, and however haunted by the promise of "soon, not yet," posting something on the Web today means publishing into a continual, continuous present that relies more on dates of access and experiences of "WELCOME" than on any date of publication. Increasing commercial uses of the Web only intensify that presentness: "Buy now!" so many pages welcome, updated with avidity for one-click shopping and real-time trading. But the World Wide Web is more consistently a text than a market ("The Web is a written place," as David Weinberger [2002, 165] puts it), and the continual, continuous present tense of Web publication in this respect must be described with care. It has a rhetorical force and also harbors significant economic implications. The present tense of the Web defies the traditional logic of intellectual property law, for one, which is based on monopolistic rights offered to creators for limited terms. As Lawrence Lessig and his colleagues protested—unsuccessfully—in *Eldred v. Ashcroft* (2003), Congress has muddied the logic of limited terms for copyright by retroactively extending them.[44] The present tense of the World Wide Web in this sense suggestively coincides with and may even buttress a new logic for authored commodities—a logic less atemporal than it is antitemporal, subject to the redefinition of limited terms and limitability by legislators responding to pressure from a corporate class of owner-elites who increasingly see "*content* as a strategic corporate asset."[45]

But the present tense of the World Wide Web follows an ancient rhetorical tradition at the same time that it does the febrile logic of "late" capitalism and global finance. This is the present tense of hermeneutics, writing about writing, and interpretive processes more broadly. It is the present tense of dream interpretation (Joseph to the pharaoh: "The seven fat cows are seven good years . . ."); the present tense of citation, quotation, and

cross-reference ("The author notes on page ten . . ." and "See also . . ."). It is the present tense of slide shows, photo albums, and scrapbook exhibitions ("Here I am at Lake Michigan"). It is the present tense where fictional characters live: Odysseus sails; Hamlet soliloquizes; Dorothy clicks her heels. It is not—to distinguish—the present tense where plants and animals live ("Chrysanthemums require long nights to flower" and "Beavers build dams"), not the present of nature and modern science ($e = mc^2$). Nor is this the insidious ethnographic present tense of early anthropology, whereby Western observers chronically "deny the coevalness" of others, as Johannes Fabian (1983) explains. Far from denying the coeval, the World Wide Web produces coevalness according to the singularity, plenitude, and instantaneity of its interpretive space. In short, the Web offers a space for interpretation where interpretation is always already underway; the machine—a disciplinary machine proper to the humanities—is running, whether users acknowledge it or not. "This is a work in which anyone can join," might be its slogan, where the figure of "anyone" produces and is simultaneously produced by the emerging new media public in which interpretive work, like battle, is continuously joined by users who browse and click as well as by those who cut and paste, post and publish.

The phrase "work in which anyone can join" comes from the original call for contributors to the *Oxford English Dictionary* (OED) in 1879, and the dictionary offers a helpful point of contrast and comparison. Unlike the World Wide Web, of course, the OED was produced with a central, institutional authority—James Murray and the Philological Society of London—and organized according to a preexisting scheme—the alphabet. Like hypertext, though, the OED publishes a Web of excerpts and references, dated quotations to illustrate evolving usage. That singular, immense web, Seth Lerer (2002, 109, 108) explains, "was built collaboratively, out of Victorian habits of reading," as scattered members of the English reading public sent the editors thousands of slips of paper bearing the examples of usage they encountered. And as such, the dictionary assembles "not only a history of language but a history of reading taste, a record of the ways in which the scope of English prose and poetry was understood" in the decades of the OED's compilation. One might say by comparison that the World Wide Web publishes a web of excerpts and references, pages and links, built collaboratively by the euphemistic "anyone" of contemporary computer literacy, Internet access, software and hardware resources. But imagine an OED in which none of the quotations are dated or, better, no single understanding of their datedness holds sway. Such a dictionary could offer no history of language, but it could still encapsulate and thereby document the reading practices of its own "anyone" for the period of its compilation. If that compilation were ongoing, like the World Wide Web or the new edition of the *Online OED,* then it would continuously encapsulate the reading practices and interpretive strategies of a continuing present.

This is something of what I mean when I call the Web an interpretive space in which interpretation is always already underway, or a machine proper to the humanities. Both metaphors, like the OED analogy, imagine a public variously engaged in reading, selecting, excerpting, linking, citing, pasting, writing, designing, revising, updating, and deleting, all within a context where the datedness of these heterogeneous *interpretive* acts remains inconsistently perceived or certain. Just as an OED without datedness would no longer offer a history of language, the World Wide Web offers scant help on a history of "the language of new media," in Manovich's phrase. Users catch glimpses—via the Wayback Machine, for instance, and in the litany of revisions noted in a DTD, in old threads of discussion available via Google Groups, in the archived entries of the blogosphere, or in the obsolete RFCs still offered for "historical purposes"—but users must interpret each with care. Nostalgia—a close relation of Vivian Sobchack's (2004) "mnemonic aesthetic"—encourages varied "emulations" of the past, like the browser emulations at Deja Vu (<www.dejavu.org>), which allow users to experience today's Web as it might have looked using Netscape Navigator 1.0 (1995) or Internet Explorer 2.0 (1995). Indeed, even apart from nostalgia, emulation is one possible preservation strategy being discussed by specialists interested in archiving digital resources.[46]

It is not that the Web resists history per se, only that electronic documents compel attention to themselves as differently—often dubiously—historical, where history always happens at the levels of—at least—data, metadata, program, and platform. (Think of the open source movement and the incremental versioning of Linux.) Seen in this light, the Web presents an opportunity at least as much as it presents a problem. Amid an unrelenting contextual historicism—the developmental arc or time code of "late" capitalism along with the unshakable, concomitant ideology of progress—the Web helps to pose the question of history itself. Electronic documents may defy bibliography, but they inspire keenly bibliographic impulses. Each lacuna in provenance (the discomfort of not knowing where a digital object comes from) can help put provenance on the table. I am being sanguine. The putative "end of temporality" associated with today's communication technologies need not mean the end of temporality any more than the nineteenth century's telegraphic "annihilation of space" put an end to space.[47] Emulation works as a preservation strategy in part because it helps self-consciously to underscore the differences between pages and documents—that is, between issues of format and matters of concern. In this respect, the World Wide Web offers a vernacular object lesson in what Jerome McGann has called

"the textual condition." As much as the authenticity of original documents serves as an intuitive source of orientation and in some contexts (like fiduciary institutions, state bureaucracies, and the courts) a matter of practical necessity, the original as such does not exist, since documents are "only" social experiences of meaning. The document I write and the desktop window I write it in are not materially different from one another. Both are data and metadata saved to the hard drive, and represented on the screen. The former stands as a document because of its context, not its body, where context involves the whole social realm and human labors of literacy, inscription, writtenness, and computing; of representing and saving; that is, of meaning and the presence of meaning.

The H-Bot

None of this is to deny that the World Wide Web presents interesting challenges for media history, or that U.S. culture today continues to enjoy a vexed and varied relationship with historical memory. A historian at George Mason University is working with the Center for History and New Media there to develop a program he calls "H-Bot," a personified search engine designed to liberate students from the tedium of memorizing dates. It is not a mnemonic device to help users remember but rather a mnemonic prosthesis to harvest dates from the Web so users don't have to remember. Like the introduction of pocket calculators in math and science classrooms, the H-Bot is intended to spare students from relative trivialities so they can attend to more interesting and conceptual stuff.[48] At present (in "alpha release"), the search engine greets users on the Center for History and New Media site:

> I'm ready to help you find a year in which something happened (between 1000 and 1990 AD), and possibly the exact date as well (if applicable). **Please type in your search phrase in the past tense and use details where possible.** For example:
> » **Charles Darwin was born (rather than "Darwin was born")**
> » **The Magna Carta was signed (rather than "The Magna Carta")**
> » **The Berlin Wall fell**
> » **Queen Victoria ascended to the throne**
> » **The Battle of Hastings was fought**
> » **James Joyce's Ulysses was published**

Users enter a statement into a query box and click the button marked "in this year, . . ." Relying in part on the analysis of results produced by Google's search algorithms, and in part on local databases and standard query language, H-Bot identifies the dates events occurred. For instance, in 1.9 seconds it can reply to the statement "James Joyce's Ulysses was published" with the rejoinder "I am extremely confident that the year was 1922." Repeated searches take different amounts of time, depending on server and network traffic as well as the specificity and decorum of the query. The H-Bot is unable to answer questions about events that happened in more than one year like "James Joyce lived in Dublin" (a range of years) and "Eugene V. Debs ran for president" (several different years). Specificity in phrasing queries makes a big difference. And H-Bot is capable of some interesting errors.

H-Bot can sometimes mistake fiction for fact. Asked when martians landed in New Jersey, for instance, the H-Bot is extremely confident that the year was 1938, the year of Orson Welles's "War of the Worlds" broadcast. Asked when Leopold Bloom walked around Dublin, the H-Bot is extremely confident that the year was 1904, the date of events represented in Joyce's novel of 1922. Both examples arise from the relative lack of distinction among representations on the Web: events are events, whether they actually happened or not. The H-Bot does not distinguish martians or Bloom as fictions because it does not recognize the multiple levels at which interpretation operates—a matter of semantics that reaches far beyond local or grammatical distinctions between the present tense and the past. Asked when the telephone was invented, the H-Bot is extremely confident of 1860, because of the work of Antonio Meucci and possibly Philip Reis; asked when Alexander Graham Bell invented the telephone, and the answer is 1876. The normal meaning of *invented* makes these contradictory results, but the H-Bot is blind to this semantic issue as well. Its extreme confidence comes not from any real understanding or artificial intelligence but from the native assumption of its users that a perfect search algorithm can someday be developed to analyze Google's index of the World Wide Web, which is structured in part according to Google's own problematic assumptions about what its designers call the "uniquely democratic" nature of the World Wide Web.[49]

Like the Internet of 1854, the H-Bot gets things "wrong" only to the extent that users allow its personification to displace or repress their attention to the aggregate human labor according to which the program actually functions. The H-Bot works exactly as programmed on data precisely as they stand. Its errors are slips of the tongue, occasions for users to glimpse again their own unflagging and largely unconscious desire for reading machines and self-knowing texts, for what Tim Berners-Lee and the W3C actually already envision as the Semantic Web, a better, increasingly self-reading version of today's World Wide Web.[50] The H-Bot in its later incarnations may well circumvent the martians in New Jersey and other such chimera, but I hope it doesn't. As a pocket calculator for

dates, the H-Bot stands partly to reinscribe the limited construction of historical events that its designers seek to trivialize: births, deaths, battles, treaties, and ascensions to the throne. But as a game for trying to generate chimerical results, the H-Bot challenges players to think about historical events as well as digital representations as fully complicated interpretive acts. In what sense do fictional events "happen" on publication? In what ways can the definition of *invented*—or of *the* telephone—be interrogated and enlarged? How might events themselves be produced by the retrospective inquiry that interprets them *as* events? Players test the H-Bot's "understanding" by self-consciously honing their own knowledge of history, the Web, and history on the Web. In short, history is the object of this game. As the object, history requires, first, a significantly detailed knowledge of the past; second, a modest sense of how search engines function; third, a broadly speculative sense of the kinds and variety of representations of history on the Web; and fourth, a related sensitivity to "history" as itself historically produced. Players posit the accumulated labor that has produced the searchable Web, and they enjoy—they win—a richly historicized version of history.

Epilogue: Doing Media History

Good words do not last long unless they amount to something.
—Niimiipu Chief Joseph, Washington, DC, 1879

In 1877, while Edison was busy working on telephones, telegraphs, and tinfoil phonographs at his laboratory in Menlo Park, New Jersey, the United States was still fighting Indian wars. In October, the military campaign and subsequent retreat of the Nez Percé came to a disastrous end in what is today the state of Idaho. Chief Joseph surrendered to U.S. Army general Howard with the immortal words, "From where the sun now stands, I will fight no more forever." His words were immortal according to the offices of Arthur Chapman, an interpreter, and Charles Erskine Scott Wood of the general's staff, who carried a pencil and a pad of paper and was able to collect them as they "fell from the lips of the speaker." *Harper's Weekly*—the self-avowed "Journal of Civilization"—published its version of Wood's account in November 1877 for general circulation. Wood later gave away his manuscript, which then disappeared, and made a copy, also lost, but he was still memorializing the fugitive's surrender inside quotation marks as late as 1936. Chief Joseph, meanwhile, told his own version of events to a reporter in Washington, DC, where he made his case to federal officials. The *North American Review* published Joseph's account under the title "An Indian's View of Indian Affairs" in April 1879. It details the iniquities suffered by the Nez Percé at the hands of government agents, up to and including the lies that prompted Joseph to surrender that October, with the immortal words, "From where the sun now stands, I will fight no more."[1]

Which did Chief Joseph say: "I will fight no more," or "I will fight no more forever"? Strictly speaking, he said neither and he said both. He did not speak words in English, and the "no more" version nests within "no more forever." As a matter of public record, however, Joseph's words remain indistinct for other reasons as well, because documentary

evidence is scant, and because no sound recording exists or could exist. Check Google today, and the jury is still out. "I will fight no more forever" is the most common version, but "I will fight no more" and "I will fight no more against the white man" both get "votes," according to Google's organizing metaphor of linking as voting. Knowledge of sound recording and the familiar certainties of schoolbook history—"just the facts"; "true or false"—help, on reflection, to make this a pretty uncomfortable situation. Neither, both, and one-or-the-other: unless we do successfully "provincialize Europe" and critique empiricism, in Dipesh Chakrabarty's terms, Niimiipu chief Joseph must have had some exact words. The practices of sound recording play a forgotten role in this discomfort, because at a basic level speech is made public and falsifiable or "exact" according to the offices of its imagined and culturally imaginable mediation.[2] Speech gains immortality, that is, partly according to all of the constructed instruments and institutions of its potential preservation. The *forever* that attended and/or appended Joseph's surrender serves as much to address the problematic involved in collecting and preserving speech as it "falls from the lips" as it does to suggest the finality of his capitulation.

The continued indeterminacy of Joseph's speech hints anecdotally at the particular conjunction of interpretation and preservation—of records and documents—that I have been addressing at length in these pages. Joseph's or Wood's *forever* rings with the question of its own immortality—a question that cannot be divorced from the interconnected subjects and instruments of inscription as they have variously been deployed and experienced. Google hits on Chief Joseph's "fight no more" suggest the latest and now digital iteration of the long-lived romantic tradition of Indian oratory in the United States, wherein the characters of John Logan and Red Jacket "spoke" stirring words from the pages of schoolbooks, available for memorization and recitation—for hits, one might say—by generations of U.S. schoolchildren. Only with the burden of contexts and questions such as these can Edison's claim to have "captured" "fugitive" sounds for the first time in 1877 read clear.[3] And only with the attendant depth and complexity of *forever*—in or of Chief Joseph's words, neither and both—do the keywords *record* and *document* really make sense.

In the preceding pages a different yet related *forever* flits behind the scenes, emerging here and there in fleeting allusions to literary history, of which the romantic construction of Indian oratory in one sense forms a chapter. Because of my own training and experience, literary history has been my ready example of the humanities, that group of related disciplines that emerged institutionally toward the end of the nineteenth century with the "peculiar burden," Lawrence Veysey (1979, 52) writes, "to represent the heritage of higher

'civilization.'" My object has not been to solidify some point about the literary as such, or about "civilization," certainly, but rather to promote by example the ways in which doing media history can grant partial access to the epistemologies and practices of humanists and the humanities. As Lorraine Daston (2004, 363) has observed, there is a healthy and diverse literature on the sociology (for lack of a more comprehensive term) of scientific knowledge. Scholars have considered "how biologists learned to see under the microscope, how botanists learned to characterize plants in succinct Latin, [and] how physicists learned to abstract from messy phenomena to mathematical models." Historians of science have offered their readers "a social history of truth" itself.[4] But far more rare are considerations of how knowledge in the humanities comes about: How have literary critics learned to criticize? Asks Daston (363), "How do art historians learn to see, historians learn to read, philosophers to argue? What is the history of the art-historical slide collection, the initiation into archival research, the graduate seminar?" What are the sociological origins of truth in the humanities? Media history bears closely (though not exclusively) on questions such as these. Better still, media history offers access to the epistemologies and interpretive practices of the humanities at a vernacular as well as scholarly or academic level. Media aren't the instruments of scholarship in the humanities; they are the instruments of humanism at large, dynamically engaged within and as part of the socially realized protocols that define sites of communication and sources of meaning. Media history offers nothing less—if also a great deal more—than the material cultures of knowledge and information.

How does the early history of recorded sound connect to Moses Coit Tyler's collation of early American literature? How does the early history of distributed digital networking connect to National Endowment for the Humanities–funded editions of Emerson and other literary lions? I have tried to make gentle, contextual connections, suggesting that media history and literary history share the same groundwater, not that one drives or determines the other. By implication, one of the great benefits of doing media history is that it latently offers what anthropologist Alfred Gell (1992, 42) calls a "methodological philistinism" with which to glimpse the broadly canonical cultural productions—literary and otherwise—and canonizing operations that inform humanism and humanistic inquiry today. Gell uses an analogy to describe his perspective, noting the distinction that routinely and intuitively gets made between studying religion while putting aside questions of belief (anthropology of religion, religious studies) and studying religion while believing it (theology). One might say by comparison that there must be a similarly

valuable distinction to be drawn between studying literature while putting aside questions of aesthetics (media history) and studying literature while "believing it," naturalizing literariness and literary aesthetics (English).[5]

Let me quickly emphasize, as Gell does, that doing media history does not make one a philistine; rather, it can offer a methodological detour around the aesthetic in order to make the multiple conditions of its cultic status (that is, aesthetic value) more clear. The goal is to understand the aesthetic in a broader, more catholic sense.[6] This amplifies a move made so deftly by John Guillory (1993, xiii) in *Cultural Capital,* which aims at today's crisis in the humanities by focusing "debate away from the question of who is in or out of the canon [and toward] the question of canonical form in its social and institutional contexts. The form we call 'literature' organizes the syllabus and determines criteria of selection much more directly than the particular social biases of judgment which have been invoked to explain the canonical or noncanonical." The social and institutional contexts that have produced literariness as a canonical form—as a belief, Gell might say—include as well as partly consist of media, the techniques and conditions that structure communication as cultural practice, and that thus provide the ground for any specifically literary communication, whether the early American texts established by Tyler or the U.S. authors edited by the Center for Edition's of American Authors with the imprimatur of the MLA. As Guillory puts it, drawing on Walter Benjamin, "Canonicity is not a property of the work itself but of its transmission in relation to other works in a collocation of works" (55).

Guillory's idea of transmission interrogates "the syllabus in its institutional locus, the school"; although one might well probe more generally, to interrogate "the ways in which knowledge has been, is, and will be shaped by the transmissive means through which it is developed, organized, and passed on." The "arts of transmission" so designated embrace the history of the facticity of the modern text speculated here (see chapter 3)—including the histories of—writing, print, and nonprint media as they have developed and continue to develop in mutually defining ways, as foils.[7] It is in this spirit, for instance, that Meredith L. McGill's (2003, 8) history of reprinting in the United States (1834–1853) shows how disputes over intellectual property rights helped "to structure the literary field, and how the question of the cultural status of the literary [got] folded into the texts themselves." It is in a similar spirit, further, that Jorge Cañizares-Esguerra (2001, 6–8, chapter 1) connects baroque debates about Amerindian scripts and the history of writing to the development of a modern, historiographical sensibility more commonly dated to the end of the eighteenth century. Like McGill's literary field or Cañizares-Esguerra's historiographical sensibility, Tyler's records and Emerson's documents have been structured in part according to the wider economy of records and documents—aesthetic or nonaesthetic, "literary" and not, inscribed on paper or elsewhere—within which each came and continues to enjoy cultural currency within the contexts of its own *forever.* Disputes, debates, and economies broadly proper to the history of media have helped variously to produce the literary, the historical, and the like—to produce, that is, the data of culture as such.

What are the contexts of *forever* today, now that so many channels of communication are digital, and now that the data of culture are increasingly articulated, processed, transmitted, and stored electronically? The foregoing pages suggest how broad the relevant contexts are, while the ongoing crisis in the humanities indicates just how unsettled and at times contested they can be. Whereas the new medium of recorded sound emerged out of and into the chaos of industrialized communications at the end of the nineteenth century, new media today emerge out of and into a comparable chaos called "the postindustrial." Recalling the nineteenth-century version, this chaos entails that provenance is routinely in question (bibliographically), that reception is frequently in doubt (sociologically), and that authorial ownership is keenly in dispute, as the global marketplace rushes on and roils the law. What are the political economies of writing and reading, of seeing and knowing, online? How should electronic information be secured and preserved? Who knows where this or that digital content comes from? Which images have been doctored? Who sent me this spam? New media emerge amid the chaos that they help partly to reconstruct as order, the so-called logic of the postindustrial and postmodern.

It is tempting to see the two cases elaborated here as indexes of vaguely symmetrical epochs in the United States: on the one hand, the "Search for Order" (historian Robert H. Wiebe's description of 1877–1920) pursued at the expense and to the exclusion of Chief Joseph, among many others; and on the other hand, the "New World Order" of single-superpower status pursued at the expense of denominated "evil ones" and attendant "collateral" casualties, for instance, in places like Iraq. But questions of Order (with a capital O) at levels like these are well beyond the immediate scope of these pages. Media history offers instead the always emerging "order" (with a lowercase o) of public life and public memory. Even if it can be difficult to read lowercase order into the big picture, quandaries and contests over the meaningfulness of specific inscriptions suggest that such connections do exist, and that they must be plumbed with care. My examples may be phonograph records and electronic documents, but one might think as well of draft cards, green cards, and other paperwork, for instance, or of missing minutes of audiotape, enigmatic assassination footage, or satellite images of suspected missile sites.